Ministry of Universities,
Science and Communications

Annual Report
1984–85

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May 31, 1986

The Honourable Robert G. Rogers
Lieutenant-Governor of British Columbia

MAY IT PLEASE YOUR HONOUR:

Herewith, I respectively submit the Annual Report of the Ministry of Universities, Science and Communications for the year ended March 31, 1985.

Yours truly

Patrick L. McGeer
MINISTER

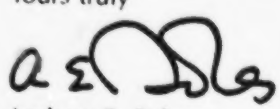
May 31, 1986

The Honourable Patrick L. McGeer
Minister of Universities, Science and Communications
Parliament Buildings
Victoria, B.C.

SIR:

I have the honour to submit the Annual Report of the Ministry of Universities, Science and Communications for the year ended March 31, 1985.

Yours truly



Andrew E. Soles
DEPUTY MINISTER

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MESSAGE FROM THE MINISTER

In last year's message I summarized our Ministry's goal: economic recovery for British Columbia and Canada. In 1984/85 we worked towards that goal by continuing to broaden our economic base with high technology.

The work done by this particular ministry has been both a maintenance and an innovative nature. The "maintenance" includes continued support for the university system and our science and research programs, and further commitment to our "open skies" communications policy. The "innovative" work is always ongoing as new projects and ideas constantly arise.

Perhaps most rewarding to note is that programs once viewed as purely "innovative" have now matured and become an accepted and integral part of our provincial network. Scientific and research oriented activity is no longer overlooked. Instead, achievements in this area are being rewarded and recognized.

For the first time Innovations Awards, decided upon by members of the Discovery Foundation, were given to three outstanding B.C. firms and the Science Council also awarded Gold Medals in what has become a prestigious annual event for the science community.

This year saw continued expansion of our CNG program as more vehicles were converted (many qualifying for the $200 provincial grant), the number of service stations increased and the Provincial Government officially declared that all new government vehicles — purchased or leased — would be required to have a dual fuel (gasoline/CNG) system.

In a continuing effort to attract high technology industry and investment to B.C., I personally met with officials, businessmen and scientists in Texas, Oregon, Finland, England, Japan and Alberta.

It has been another busy year in our ministry. The success we have achieved is due in a large part to a dedicated and compact team of public servants. My thanks goes to them all.

DEPUTY MINISTER'S MESSAGE

As the name indicates, the Ministry of Universities, Science and Communications combines three major divisions with distinctive yet interrelated mandates and missions. These are summarized below:

Universities Division

The mission of the Universities Division is determined by three major pieces of legislation. The first is the general reponsibility required by the *Financial Administration Act* for accountability and administration of the financial affairs of the division. The second is the set of responsibilities set out in the *Ministry of Universities, Science and Communications Act* which requires the division "to encourage and facilitate the development of university instruction and research in all branches of knowledge." The third is the *University Act* which establishes the Universities Council of B.C. as the interbody between the universities and government, delegates to the Council the power of allocation of the general operating grants, and assigns the management of the universities to the boards of governors and the academic governance to the senates. Within these legislated requirements and restraints the division works in liaison with the involved groups to develop policy, recommend levels of financial support for the system and to act as the focus for the concerns and interests of other provincial ministries, the federal government, private agencies and the general public concerning the three public universities and a number of related higher education services.

Science and Technology Division

The mission of the Science and Technology Division is "to develop policies and programs that will encourage the development of science and technology." The Ministry has exercised this mission by: establishing a support system designed to provide an environment in which scientific research and technological development can flourish; encouraging and supporting the growth and development to advanced and high technology industry in B.C.; and stimulating technological innovation and entrepreneurship to create new industry and assist existing industry to become more competitive.

By investing in the chain of events leading from basic research through applied research/development to commercialization and market development, S&T policies and programs have been structured to achieve optimum economic benefit. The focus has been on the growth and development of high value-added, knowledge-based industry.

Science and Technology program delivery is provided through the Ministry and several non-government agencies, namely:

—*The Science Council of British Columbia,* which provides research grants and fellowships and is available to advise government on science issues;

—*The Secretariat on Science, Research and Development,* which provides administrative services to the Science Council, general information services, and liaison with other agencies and jurisdictions;

—*The British Columbia Research Council* and its technical operating component, *B.C. Research,* provide contract research and development and medium to long-term research into areas of economic importance to the province;

—The *Discovery Foundation* and its subsidiaries —

Discovery Parks Incorporated, which provides research park facilities and multi-tenant incubator research space.

Discovery Enterprise Program: providing risk financing for advanced/high technology industry.

The Innovation Office: providing counselling in the field of innovation and technical entrepreneurship.

Communications Division

The mission of the Communications Division, is "to aid in the development of effective communications systems for the people of the province."

To enable government ministries and agencies to function effectively, the Communications Division plans, furnishes and manages the government's communications systems. To promote the orderly development of communication services and to encourage the development of telecommunications industry in British Columbia, the division formulates, recommends and implements policies; supports research and development; acts on behalf of the people of British Columbia in regulatory matters; assists communities to improve their communications systems; and maintains working relations with industry and governments to address provincial and national issues. All of this also gives the government the capability to optimize social and economic benefits of communications for British Columbians through its "open skies" policy.

MINISTRY ESTIMATES AND EXPENDITURE

Ministry of Universities, Science and Communications
Summary of Ministry Expenditures by Vote Compared with Estimates for 1984/85

Description of Vote	Vote No.	1984/85 Estimates	1984/85 Expenditures
Minister's Office	71	$ 127,518	$ 126,342
Ministry Operations	72	11,923,515	11,754,551
Gov't Telecommunications	73	10	10
Universities	74	328,248,700	328,231,005
		$340,299,743	$340,111,908

Ministry of Universities, Science and Communications
Comparison of 1984/85 Ministry Group Account Classifications Estimates vs Expenditure

	1984/85 Estimates	1984/85 Expenditures
Salaries and Benefits	$ 3,243,073	$ 3,126,175
Operating Costs	26,610,305	29,019,550
Asset Acquisitions	2,497,000	1,140,882
Grants and Contributions	338,248,700	338,289,005
Recoveries	(30,299,335)	(31,463,704)
	$340,299,743	$340,111,908

Ministry of Universities, Science and Communications
Comparison of Estimates and Expenditures
by Vote and Group Account Classification

	Vote	1984/85 Estimates	1984/85 Expenditures
Minister's Office	71		
Salaries and Benefits		$ 115,254	$ 117,750
Operating Costs		12,264	8,592
		$ 127,518	$ 126,342
Ministry Operations	72		
Salaries and Benefits		$ 1,310,094	$ 1,235,162
Operating Costs		594,421	402,849
Asset Acquisitions		19,000	58,540
Grants and Contributions		10,000,000	10,058,000
		$11,923,515	$11,754,551
Government Telecommunications Services	73		
Salaries and Benefits		$ 1,817,725	$ 1,773,263
Operating Costs		26,003,620	28,608,109
Asset Acquisitions		2,478,000	1,082,342
Recoveries		(30,299,335)	(31,463,704)
		$ 10	$ 10
Universities	74		
Grants and Contributions		$328,248,700	$328,231,005

Ministry of Universities, Science and Communications
Yearly Expenditures
for the fiscal years 1980/81 to 1984/85

	1980/81	1981/82	1982/83	1983/84	1984/85
Minister's Office	$ 159,816	$ 146,413	$ 154,223	$ 110,421	$ 126,342
Min. Operations[1]	5,106,237	11,498,978	8,735,012	10,372,005	11,754,551
Gov't Telecommunications	17,317,109	21,406,071	24,119,139	26,781,493	10
Universities	269,936,226	326,567,674	354,608,545	349,542,574	328,231,005
Statutory — University of Victoria Special Appropriation Act, 1984				16,000,000	
	$292,519,388	$359,619,136	$387,616,919	$402,806,493	$340,111,908

Notes: [1] "Ministry Operations" includes staff and expenses for Administration Support and Metric Conversion, Science and Technology Programs, Communications Programs and the Universities Division (Administration Support and Metric Conversion has since been altered as a designation).

MINISTRY OPERATIONS

Ministry Operations is composed of the Executive of the Ministry and their secretaries, the management and support staff for the Universities Division, the Science Division, the Administrative and Communications Programs branch, and the Financial Services branch, together with consultants required for special research projects.

Because telecommunications services for government are charged back to the user ministries and agencies, the part of the Ministry executive and support staff having to do with furnishing service to government is contained in a separate vote.

EXECUTIVE OF THE MINISTRY

The Executive of the Ministry is responsible for ensuring that the Ministry's policies, priorities and program content, determined by the government, are properly administered. Two Assistant Deputy Ministers and an Executive Director report directly to the Deputy Minister. Five middle management staff report to the Assistant Deputy Ministers.

DIVISIONS

Comment upon the activities of each of the Ministry's three divisions is provided in the following pages, commencing with Universities.

UNIVERSITIES DIVISION

MISSION AND ROLE OF THE UNIVERSITIES DIVISION

Legislation

The mission of the Universities Division is "to encourage and facilitate the development of university instruction and research in all branches of knowledge". This mission is set out in the *Ministry of Universities, Science and Communications Act*. The Universities Division addresses this mission through the development of policy and the delegation of administrative powers to the Universities Council of British Columbia and to the universities; by working with other government ministries and agencies; by reviewing and making recommendations on the budget submissions, educational and capital plans of universities; and by representing the Ministry on committees and at meetings.

The *University Act* determines the roles and functions of the Universities Council of British Columbia, the three public universities, and to a lesser extent, the Ministry. The Council is set up as an inter-body to preserve university autonomy and to provide the government with advice on university matters. The *Act* prohibits the Council from interfering with the universities' academic decisions which include the formulation of academic policies and the establishment of admission standards. The duties and functions of each university are divided between two major bodies — the Board of Governors and the Senate. The Board, which has a majority of government appointees, is responsible for the overall management of the affairs of the university, whereas the Senate, essentially a body drawn from the academic community, is responsible for academic matters.

The final piece of legislation which affects the mission and more specifically the operations of the Universities Division is the *Financial Administration Act*. This legislation holds the Ministry accountable for its administration and financial affairs.

Goals and Objectives

The development of goals and objectives is based upon the legislation and a recognition of the arm's-length relationship between the Ministry and universities.

The first goal of the Division is to act as the focus point in government for the interests of:

- other governments and agencies such as the Secretary of State of Canada, the Council of Ministers of Education, Canada (CMEC), the education departments of other provinces and American states, and international bodies such as the OECD;
- the private degree-granting institutions in B.C. and elsewhere;
- potential students and the general public in higher education; and
- other B.C. government ministries and agencies in university education issues.

The second goal is to act as an advocate for the university system within government. The budget process is the main avenue for achieving this goal.

The third goal is to ensure there is accountability for the universities' very large public expenditures. Since the institutions are accountable to their Boards of Governors, review of the universities' operations by government personnel is frequently questioned. Meeting the accountability goal requires the close cooperation of the Ministry, institutions and the Council, and an understanding that success as an advocate for the university system depends to a large extent on meeting the accountability goal.

The fourth goal is to become knowledgeable about higher education issues at the provincial, national and international level, and to use this knowledge in formulating policy advice and drafting legislation for government.

The fifth goal is to represent the interests of the universities and their students in the development of programs for student aid. The Student Services Division of the Ministry of Education administers this program, but this Ministry presents its views as a member of the Provincial Authority on Student Aid.

Resources

The Universities Division has three professional staff members and contracts for certain other professional services. A reorganization of the Ministry at the beginning of the year elevated the Assistant Deputy Minister of Universities to the vacant Deputy Minister position and resulted in an organizational change within the Universities Division. The division is now composed of the Executive Director (who reports to the Deputy Minister), the Manager of University Services, an economist and one secretary. These changes have meant new and expanded roles for senior staff. The Executive Director is now the major contact with the universities on programs and policy matters; the Manager of University Services is responsible for capital projects and for the institutions and services funded through Operating Contributions — Other; and the economist is primarily responsible for the development, analysis and reporting of data and related statistical information. Since the division is small, other tasks must be handled on an ad hoc basis. The division's responsibilities include:

- the development of policies, procedures and legislation;
- the review of and recommendations on the operating and capital budget submissions and plans of the universities and related institutions;
- liaison with other ministries and central government agencies (e.g., Treasury Board);
- liaison on higher education matters with the CMEC, participation on its committees and provision of information on higher education issues in British Columbia;
- liaison with the Council for Postsecondary Education in the State of Washington on the reciprocity agreements that exist between institutions in the two jurisdictions;
- coordination of special projects funded through Operating Contributions-Other such as distance education, the Open Learning Institute, the Knowledge Network, Western College of Veterinary Medicine, and Engineering Expansion; and
- the development of an information system on higher education.

During the fiscal year a contract consultant provided assistance in the area of data processing and analysis, and liaison with the Universities Council of British Columbia (UCBC) in its long-range planning exercise. In addition, a Special Advisor to the Deputy Minister was seconded to the Ministry to examine the problems of cost-sharing among the five teaching hospitals in the Lower Mainland and the Faculty of Medicine at The University of British Columbia, and to investigate the needs of the universities for assistance with financial problems that arose as a result of the reduced government grant. The latter project was complex, and required considerable effort by the Special Advisor, the staff of the division, Council, and in particular the administrators of the universities. As a result of this special study, the government awarded a special grant of $2.354 million to UBC which prevented the university from ending the fiscal year in a deficit position.

Role and Functions

The Universities Division administers the government's policy concerning the operation of the province's three public universities: The University of British Columbia,

Simon Fraser University and the University of Victoria. Grants provided by the Ministry totalled approximately $328 million in 1984-85, or 4% of the provincial government's total expenditures. This sum included $286 million for general operating purposes, $12.5 million in operating contributions for specific purposes such as the Open Learning Institute and the Western College of Veterinary Medicine, $29 million in capital support for university buildings and renovations, and $ 531,000 for the operations of the Universities Council. Table 1 shows the estimated and actual expenditures for the Universities Vote — Vote 74 — for fiscal year 1984-85.

TABLE 1
1984/85 Estimates and Expenditures
Universities Division

	Estimates[1]	Actual[2]
Universities Council	$ 530,700	$ 530,700
Operating Contributions	285,943,000	285,943,920
Operating Contributions (Other)	12,555,000	13,716,921
Capital Support Program	29,220,000	28,039,463
Total	**328,248,700**	**328,231,004**

SOURCE: 1. Province of British Columbia, *Estimates, Fiscal Year Ending March 31, 1985.*
2. Unaudited ministerial expenditures at year end.

Table 2 shows actual expenditures for 1980-81 to 1984-85 by sub-vote.

TABLE 2
Universities Division
Expenditures, 1980/81–1984/85
($000's)

	1980/81	1981/82	1982/83	1983/84	1984/85
Universities Council	560	605	629	566	531
Operating Contributions	239,612	277,862	300,993	300,993	285,944
Operating Contributions (Other)	10,040	16,568	14,153	12,268	13,717
Capital Support Program	12,021	22,421	25,059	27,342	28,039
Student Aid	7,703	9,112	13,774	8,373	—
Total	**269,936**	**326,568**	**354,608**	**349,542**	**328,231**

SOURCE: Public Accounts 80/81–83/84; Ministry Accounts 84/85

THE UNIVERSITIES COUNCIL OF BRITISH COLUMBIA

Structure

The Universities Council of British Columbia (UCBC) is appointed by Cabinet to serve as its advisor on university affairs through the Minister of Universities, Science and Communications. The Council is an independent Crown agency established subsequent to the proclamation of the then *Universities Act* (1974). An Order-in-Council gave the Council autonomous legal status in 1978.

The relationship of the Ministry to the Council and the three universities is shown in Figure 1.

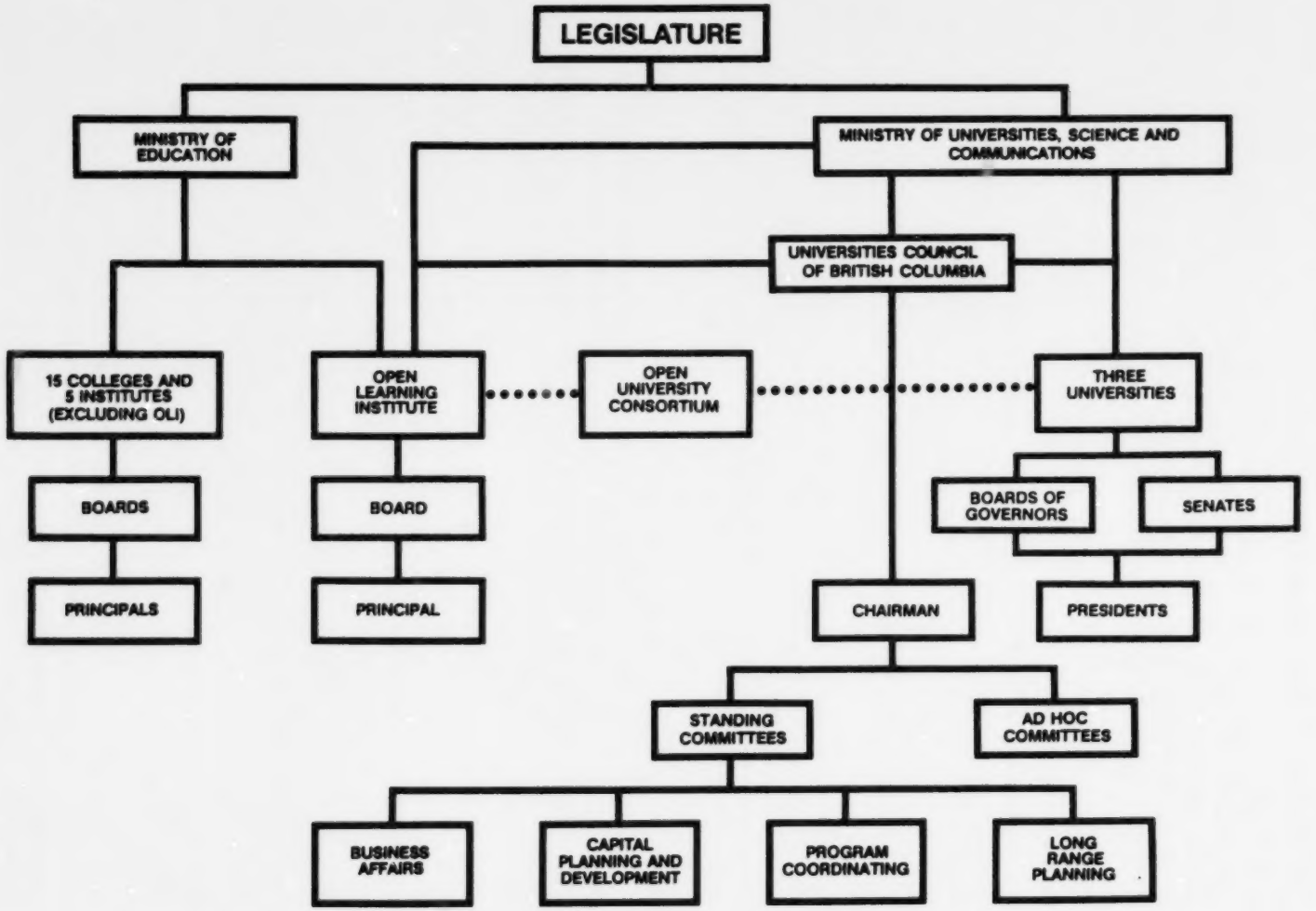

LEGISLATURE
MINISTRY OF EDUCATION
MINISTRY OF UNIVERSITIES, SCIENCE AND COMMUNICATIONS
UNIVERSITIES COUNCIL OF BRITISH COLUMBIA
15 COLLEGES AND 5 INSTITUTES (EXCLUDING OLI)
OPEN LEARNING INSTITUTE
OPEN UNIVERSITY CONSORTIUM
THREE UNIVERSITIES
BOARDS
BOARD
BOARDS OF GOVERNORS
SENATES
PRINCIPALS
PRINCIPAL
CHAIRMAN
PRESIDENTS
STANDING COMMITTEES
AD HOC COMMITTEES
BUSINESS AFFAIRS
CAPITAL PLANNING AND DEVELOPMENT
PROGRAM COORDINATING
LONG RANGE PLANNING

FIGURE 1

As can be seen from Figure 1, the Ministry's relationship to its ultimate clients — the universities and their students — is at arm's length.

The Council has eleven members appointed by Cabinet for three-year terms. A member may be reappointed for one subsequent term of three years. Members of Parliament or the Legislative Assembly, university students or employees, and public servants in the Ministries of Education, Finance, and Universities, Science and Communications may not serve on the Council. The Chairman of the Council is appointed for an initial term of three years, and may be reappointed for two subsequent five-year terms. The current Chairman is Mr. George L. Morfitt, appointed on March 14,1985 to replace Dr. William C. Gibson who was elected Chancellor of the University of Victoria.

Responsibilities

The Council serves as an intermediary between the three public universities and the provincial government. Its mandate is to promote the systematic development of university education and to create public accountability for university expenditures. One of the Council's major functions is to recommend funding levels for the three universities, and to allocate and distribute grants designated by the Ministry among the three institutions. It is also empowered under the *University Act* to: carry out studies or research projects on matters under its jurisdiction; require the universities to prepare plans for the long-term academic development of the institutions; approve establishment of new faculties/programs; establish committees on various matters; and perform other duties which will ensure the systematic development of university education in the province and the public accountability of university expenditures. In 1984-85, the Council received $531,000 in funding from the Universities Division to meet its operating expenses.

Activities

The Council has been concerned about the lack of public understanding of the role and importance of research performed at the universities in the province. Consequently, it commissioned a study by Dr. Peter Larkin, Associate Vice-President of Research at UBC, on Research at Universities in British Columbia. The study was completed in August 1984.

In December 1983 the Council initiated a study on the Education faculties at the three universities. The three Deans of Education presented their report to the Council in January 1985. The Council considered the report in February and asked for comments from the Ministry and other agencies at the end of the fiscal year.

The Council's Long Range Planning Committee includes all members of Council, the three university Presidents and the Principal of the Open Learning Institute. The Committee concluded the first phase of its strategic planning process, initiated in June 1983, with the submission of a report on policies and procedures by Dr. Kenneth Strand in July 1984. In January 1985, the Minister made a formal request to Council to develop a five-year academic plan in consultation with the universities. The academic plan is discussed in greater detail below.

At the end of the fiscal year, the Minister informed the Council of the total university funding to be made available by the government for 1985-86. In late March, the Council began consultations with the Presidents and Chairmen about the allocation of the new University Adjustments Program funding introduced in budget. The Council was preparing a brief concerning *A Bill to Amend the Trinity Western College Act* in preparation for an appearance before the Select Standing Committee on Standing Orders and Private Bills at the end of the year.

THE UNIVERSITIES

The *University Act* describes the functions and duties of the university as:

- the organization of the faculty to provide courses of instruction in an effective manner;
- the provision of instruction in all branches of knowledge;
- the establishment of facilities for the pursuit of original research;
- the provision of fellowships, scholarships and other rewards to encourage and facilitate proficiency in instruction and research;
- the provision of continuing education programs in academic and cultural fields throughout the province; and
- to generally carry out the work of the university through the cooperative effort of the board, senate and the other constituent parts of the university.

Instruction

The best recognized function of a university may be the teaching function which absorbs a large portion of the efforts of the faculty and staff. Instruction is provided at the undergraduate, first professional, graduate, continuing education, and non-credit general levels. Courses are offered on-campus, off-campus and through the Knowledge Network.

Undergraduate and first-professional instruction supply the highly skilled manpower required by the province. Post-graduate instruction provides training for future scholars, researchers and specialists in the professions. Continuing education allows professionals to upgrade skills to accommodate rapid changes in their particular disciplines.

Research

The Importance of University Research

The research function of a university is not as well understood as the teaching function. This lack of public understanding prompted the Universities Council to commission a special study by Dr. Peter Larkin on research at B.C. universities. This section draws on Dr. Larkin's studies.

The research activities of British Columbia's three universities are of vital importance not only to the institutions themselves but also to the economy of the province. The universities employ over 70% of all the research employees in the province. Over the past two decades, the most successful countries in international markets have been those that have supported their national research efforts at high levels. Although Canada contributes only 2% of the world's research, Canadian and particularly British Columbia universities have contributed a disproportionately large share of this country's research. This small effort, however, "makes us (Canada) purveyors rather than purchasers of knowledge." Research at our universities must be recognized for its critical role in the economy.

A recent study of major Canadian universities found that the average professor received 26% of his/her salary for research. Dr. Larkin concluded, however, that research efforts were intensive and while "providing 26% of the professor's salary nominally for research, the university (and the taxpayer) gets more than 26% of a professor's time."

Research Funding at British Columbia Universities

Research funding comes from several sources. For non-sponsored and sponsored research the university is responsible for the researcher's salary and the general overhead

of the university. For contract research, the total costs are covered by the contractor. Most of the sponsored research assistance comes from the federal research granting councils in the form of research awards and equipment. These awards are made through competition to ensure that the best proposals get support.

The three universities were awarded over $75 million in research grants for 1984-85, the main source being the federal granting councils which provided about 60% of the total. Other federal agencies contributed about 11%, provincial and local governments about 8%, Canadian companies and foundations about 15%, and other sources (including the university budget) about 6%. Of the total awarded, UBC as the major research centre received 79%, SFU 11% and UVic 10%.

In 1983-84, the latest year for which national figures are available, UBC ranked third out of fourteen large universities in awards per applicant from the Natural Sciences and Engineering Research Council; UVic ranked third, and SFU sixth in a group of thirteen medium-size institutions in awards per applicant. Table 3 shows research awards by discipline for the years 1980-81 to 1984-85.

TABLE 3
Research Awards to British Columbia Universities by Discipline, 1980/81–1984/85
($000's)

Discipline	1980/81	1981/82	1982/83	1983/84	1984/85
Natural Sciences	20,011	22,576	24,441	24,161	29,404
Health Sciences	12,429	15,185	15,665	18,362	21,408
Applied Sciences	9,074	10,532	10,350	11,112	13,793
Social Sciences	5,851	6,962	6,671	7,216	8,018
Humanities	951	1,246	1,353	858	1,242
Other	390	394	103	354	1,172
Total	**48,706**	**56,895**	**58,583**	**62,063**	**75,037**

SOURCE: UCBC

Public Service

The final function of the university is to provide public service. While not explicitly stated in the legislation, one of the traditional roles of a university includes acting as a reservoir of intellectual talent, enriching the cultural heritage and acting as a centre for social comment and criticism.

THE STUDENT POPULATION IN BRITISH COLUMBIA

University Credit Programs

Enrolment

In November 1984, there were approximately 51,000 students (full-time and part-time) enrolled at the three public universities. Graduate students accounted for nearly 14% of the total. Both undergraduate and graduate enrolments were down about 3% from the previous year. Approximately 15,000 students or (35%) of undergraduates were enrolled in Arts or General Studies, another 8,600 students or (20%) in Science and 5,000 students or (11%) in Education. The Applied Sciences accounted for 5% of undergraduate enrolment and Commerce accounted for 9%.

Total enrolment for the years 1980-81 to 1984-85 is shown in Table 4. Enrolment is reported on a full-time equivalent (FTE) basis in which 3.5 part-time students are deemed the equivalent of one full-time student.

TABLE 4
Fiscal Year FTE Enrolment, 1980/81–1984/85

	1980/81	1981/82	1982/83	1983/84	1984/85
Undergraduate					
General Programs	27,812	29,137	29,389	29,939	28,838
Professional Prog.	5,346	5,465	7,044	7,692	7,407
Health Sciences	1,616	1,730	1,784	1,782	1,772
Subtotal	34,774	36,332	38,217	39,413	38,017
Percent of Total	87.5%	87.5%	87.2%	86.8%	86.6%
Graduate					
General Programs	3,556	3,735	4,084	4,291	4,126
Professional Prog.	789	830	928	1,071	1,104
Health Sciences	605	648	589	622	635
Subtotal	4,950	5,213	5,601	5,984	5,865
Percent of Total	12.5%	12.5%	12.8%	13.2%	13.4%
Total					
General Programs	31,368	32,872	33,473	34,230	32,964
Professional Prog.	6,135	6,295	7,972	8,763	8,511
Health Sciences	2,221	2,378	2,373	2,404	2,407
Total	**39,724**	**41,545**	**43,818**	**45,397**	**43,882**

SOURCE: UCBC; includes students registered in the B.A. Program of the Open Learning Institute.

Table 5 shows fall headcount enrolment at the three universities for the years 1980/81 to 1984/85.

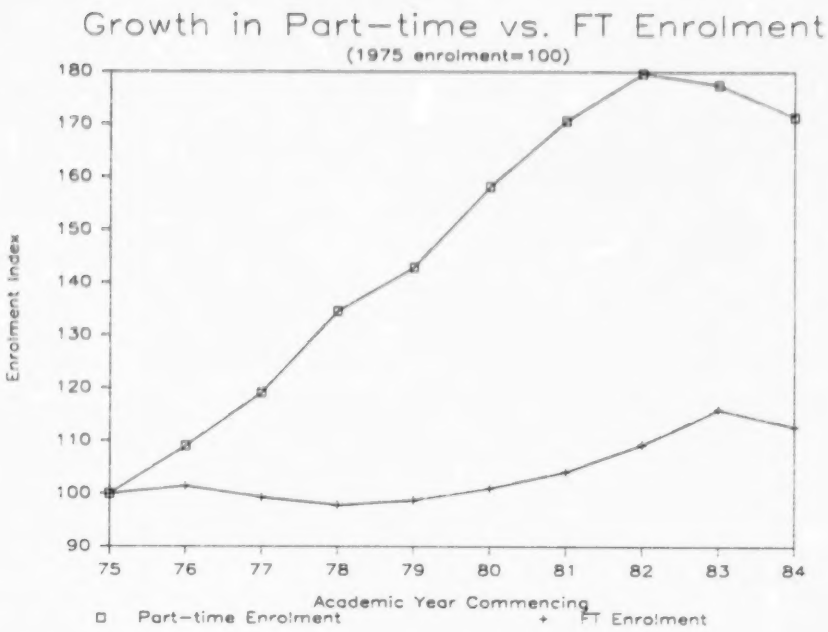
TABLE 5
Fall Headcount Enrolment, 1980/81–1984/85

	1980/81	1981/82	1982/83	1983/84	1984/85
FULL-TIME					
UBC	17,426	17,544	18,074	18,992	18,468
SFU	5,534	5,673	6,003	6,390	6,043
UVic	5,204	5,811	6,162	6,571	6,567
Undergraduate	28,164	29,028	30,239	31,953	31,078
UBC	2,353	2,447	2,614	2,811	2,710
SFU	855	849	986	1,096	1,124
UVic	425	448	564	629	556
Graduate	3,633	3,744	4,164	4,536	4,390
TOTAL	**31,797**	**32,772**	**34,403**	**36,489**	**35,468**
PART-TIME					
UBC	5,313	5,596	5,504	5,300	4,853
SFU	4,119	4,427	4,730	4,793	5,155
UVic	2,833	3,200	3,763	3,659	3,274
Undergraduate	12,265	13,223	13,997	13,752	13,282
UBC	1,087	1,064	1,117	1,214	1,286
SFU	366	475	477	400	380
UVic	416	489	464	490	364
Graduate	1,869	2,028	2,058	2,104	2,030
TOTAL	**14,134**	**15,251**	**16,055**	**15,856**	**15,312**
TOTAL HEADCOUNT	**45,931**	**48,023**	**50,458**	**52,345**	**50,780**

SOURCE: UCBC

Since the beginning of the 1970s, part-time university enrolment has grown considerably faster than full-time enrolment. Figure 2 shows this growth from 1975 to 1984. Much of this growth can be attributed to the increasing number of female students enrolling in part-time studies; women now account for approximately 60% of part-time undergraduates and only 47% of full-time undergraduate enrolment.

FIGURE 2



Source of students

Most first-time, first-year students at B.C. universities come directly from Grade 12 — about 77% of the total. Simon Fraser University, however, draws a more mature student population in general. For example, in 1982-83, the median age of new undergraduate students at SFU was 21.9 years, nearly three years older than the median age of new undergraduates at UBC.

In the fall of 1984, the number of students coming directly from high school into the university system dropped substantially; full-time entrants dropped by 12.3% and part-time entrants by 27.2%. The decline in first year enrolment was considerably greater than the decline in total enrolment shown in Table 5. This can be related to a large drop in Grade 12 graduates from 29,111 in June 1983 to 26,934 in June 1984.

Demographic factors suggest that post-secondary institutions in B.C. will experience further declining enrolments until the mid 1990s. Figure 3 shows projections of the B.C. population for the 18-24 (post-secondary) and 13-17 (secondary school) age groups. The 18-24 year age group will continue to decline for at least the next ten years. As a result of these population trends, the Ministry of Education is projecting declining Grade 12 enrolments from 1986 to 1994; Figure 4 shows actual and projected Grade 12 enrolment from 1974 to 1994.

In 1984-85, foreign (visa) students accounted for 5.1% of total university enrolment, up slightly from 5.0% in 1983-84. British Columbia's universities began charging higher fees to visa students in 1984. Most universities in Canada have similar policies.

The three universities are signatories to a Reciprocity Agreement with the Washington State Council for Postsecondary Education that waives non-resident tuition fees for a fixed number of B.C. students attending certain post-secondary institutions in the State. In return, the universities agree to waive foreign student fees for Washington residents studying in the province. The Agreement aims at having a reasonable balance of students in both jurisdictions. In 1984-85, there were 49 undergraduates and 22 graduate students from B.C. enrolled in Washington universities under the Agreement; 23 undergraduates and 42 graduates from Washington were enrolled in B.C.

FIGURE 3

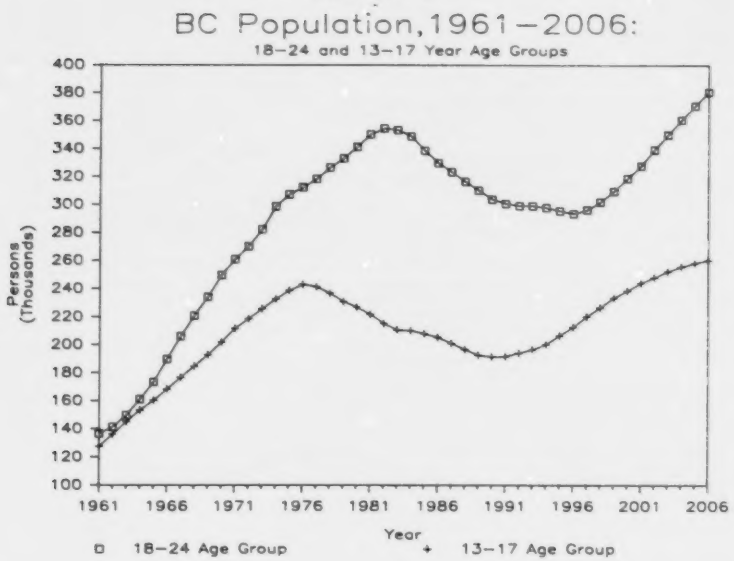
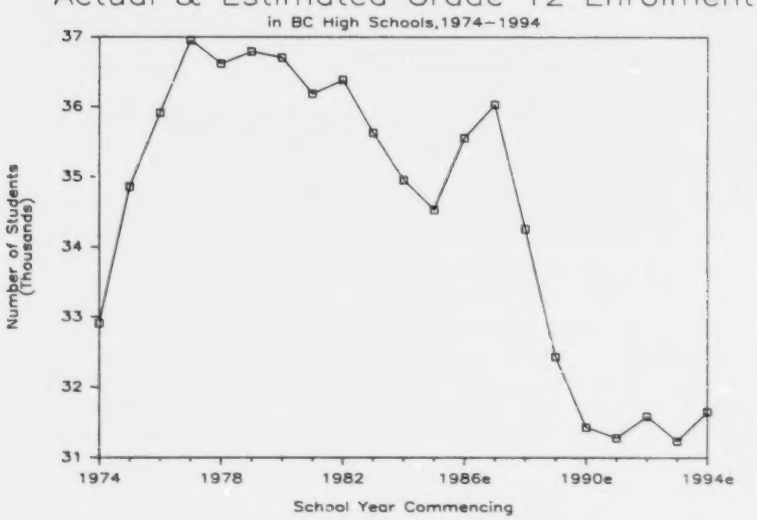


FIGURE 4



Participation Rates

While about one-half of B.C. high school graduates live in non-metropolitan regions outside Greater Vancouver and Greater Victoria, about only one-third of first-year students at the universities come from these areas. However, students from non-metropolitan areas are encouraged to enrol in university level courses offered through the extensive college system. Table 6 shows first-time, full-time non-vocational enrolment at B.C. universities, colleges and institutes as a percentage of Grade 12 graduates for the years 1979 to 1984.

TABLE 6
Total First-Time Full-Time Post-Secondary Enrolment and Post-Secondary Transition Rate

Year	Grade 12 Enrolment	Grade 12 Graduates	University Enrolment	College & Institute Enrolment*	Percent of Grade 12 Graduate
1979	36,618	29,072	4,408	8,013	42.7
1980	36,792	29,555	4,439	9,309	46.5
1981	36,704	29,292	4,423	9,366	47.1
1982	36,189	29,911	4,577	10,455	50.3
1983	36,387	29,111	4,747	10,685	53.0
1984	35,663	26,934	4,163	10,328	53.8

Source: Ministry of Education. * College and Institute enrolment is non-vocational only.

Student Aid Programs

Student aid programs were designed to ease the financial burden on those wishing to pursue post-secondary education.

The B.C. Student Assistance Program, which is administered by the Ministry of Education, was changed on April 1,1984. Students were no longer eligible for non-repayable grants. Provincial assistance, as is the case for the federal program, is limited to loans. A maximum provincial loan of $2,000 per year for single students and $2,400 for married students is available to supplement the federal program.

Students are required to use the Canada Student Loan Program before applying for a B.C. Student Loan. Approximately 40% of full-time undergraduates received the federal loan and 17% of full-time undergraduates received the provincial loan for the 1984-85 academic year. The average B.C. loan for university students was $1,288.

Table 7 shows the number of university students and the average financial aid awarded from the Canada and B.C. Student Loan Programs for the years 1981-82 to 1984-85.

TABLE 7
Financial Aid to B.C. University Students 1981/82–1984/85

	1981/82	1982/83	1983/84	1984/85
Canada Student Loan				
Number	7,823	10,928	9,940	9,619
Average Award	$1,439	$1,547	$2,487	$2,765
B.C. Student Aid (Grant/Loan)				
Number	4,907	8,022	5,280	4,830
Average Award	$1,025	$1,285	$963	$1,288

SOURCE: Ministry of Education

NOTE: [1] The B.C. student grants were discontinued in April 1984 and replaced by a loan program. A change in eligibility rules required maximum use of federal funds before provincial loans were available.

While the vast majority of students receiving federal and B.C. loans study at one of the three public universities in B.C., students in certain programs not offered in the province may qualify for the provincial loan.

Student Success

In the academic year ending 1985, the three universities awarded a total of 8,349 degrees: 6,788 Bachelor and first professional degrees, 1,366 Master's degrees and 195 Doctorates. Of the total degrees conferred, 33.0% were in the Humanities and Social Sciences, 12.9% in the Sciences, 15.0% in Education, and 12.0% in Commerce.

Table 8 shows the number of degrees awarded from 1981 to 1985.

TABLE 8
Degrees Conferred
1981–1985

Academic year ending:	1981	1982	1983	1984	1985
Undergraduate					
Bachelor and first professional	5,786	5,924	6,104	6,579	6,788
Graduate					
Master	1,006	1,030	1,230	1,244	1,366
Doctorate	170	173	153	177	195
	1,176	1,203	1,383	1,421	1,561
Total	**6,962**	**7,127**	**7,487**	**8,000**	**8,349**

SOURCE: UCBC

The universities also offer programs leading to diplomas and certificates. Table 9 shows the number of diplomas and certificates awarded from 1981 to 1985.

TABLE 9
Diplomas and Certificates
1981–1985

Academic year ending:	1981	1982	1983	1984	1985
UBC	133	128	105	126	130
SFU	21	70	91	94	146
UVIC	37	39	52	45	60
Total	**191**	**237**	**248**	**265**	**336**

SOURCE: UCBC

Some concern has been expressed about unemployment or underemployment among recent university graduates in B.C. and in Canada generally during the current recession. Surveys conducted by the three universities of past and recent graduating classes confirm, however, that employment prospects improve steadily following graduation. A 1978 UVic survey of its 1977 graduates indicated that 8.3% were unemployed.

When these same graduates were surveyed again in 1982, their unemployment rate had dropped to only 3.2%, much below the 17.2% rate for 20-24 year olds in British Columbia at that time. These results confirm general findings that university graduates have lower levels of unemployment and higher rates of labour force participation than persons with less education.

University Non-Credit Programs

The universities also offer a wide variety of non-credit programs. These programs include professional upgrading courses, workshops and seminars; general interest courses in the humanities and arts; programs for seniors; and language instruction. The programs are offered on and off-campus and in a variety of lengths. Consequently there are few accurate measures of student service. Table 10 provides course registration data from 1980 to 1984.

TABLE 10
Non-Credit Continuing Education Registrations
1980–1984

Year Ended	1980	1981	1982	1983	1984
UBC (Aug.31)	82,742	81,688	76,353	72,170	62,468
SFU (Apr.30)	15,443	18,582	21,245	24,476	19,501
UVIC Aug.31)	13,005	17,757	16,390	14,064	15,455
Total	**111,190**	**118,027**	**113,988**	**110,710**	**97,424**

SOURCE: UCBC; 1985 figures not available.

Distance Education

Programs

The universities, the Knowledge Network and the Open Learning Institute all offer university programs through distance and non-traditional delivery methods. The majority of funding for these programs comes from Operating Contributions-Other. Both credit and non-credit courses are offered through distance education. Table 11 shows credit and non-credit registration in distance education from 1981–82 to 1983–84.

TABLE 11
Headcount Enrolment
Distance Education
(1981/82–1983/84)

	1981/82	1982/83	1983/84
CREDIT			
UBC	2,663	1,729	1,660
SFU	2,869	3,845	4,939
UVIC	3,126	3,147	2,551
Total	8,658	8,721	9,150
NON-CREDIT			
UBC	16,277	11,801	12,722
SFU	3,657	4,620	3,180
UVIC	9,049	6,766	5,038
Total	28,983	23,187	20,940

SOURCE: UCBC; 1984/85 figures not available.

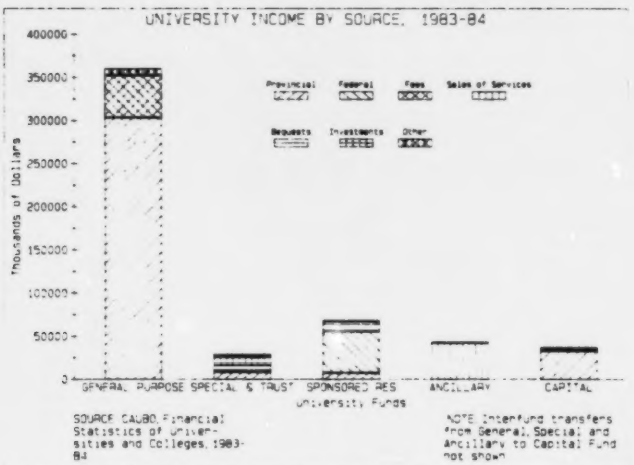
Open University Consortium

At the direction of the Minister and led by the Universities Council, the three universities, the Open Learning Institute and the Knowledge Network joined together to form the Open University Consortium of British Columbia. The Consortium makes it possible for students to combine classroom-based and home-study courses from all member institutions in order to obtain a recognized university degree through the Open Learning Institute. Knowledge Network programming supports many of the courses. The Consortium plans and coordinates distance education programs throughout the province. The 1984-85 calendar listed 177 courses. The Consortium and the other distance education efforts make B.C. a world-leader in this field of education.

PROGRAM ACTIVITIES

Although the universities receive the bulk of their funding from the provincial government for general purpose activities (e.g., instruction and non-sponsored research), they do have other sources of income. The universities have five income funds: General Purpose, Sponsored Research, Trust and Endowment, Ancillary Services (e.g., residences, parking), and Capital (i.e., plant). Figure 5 shows the sources of income by fund for 1983-84, the latest year for which information was available. Sources of income are: provincial government, federal government, bequests, investment, fees, sales and other. Provincial government funding is the major source for the General Purpose and Capital funds, but Ancillary Services are operated on a fee-for-service basis and receive no government grants. The federal granting councils are the major sources of income for the Sponsored Research fund.

FIGURE 5



General Operating Contributions

Government Contributions

In 1984-85, operating grants from the provincial government accounted for approximately 81% of the universities' general income. Revenues from fees accounted for 17%, and the remaining 2% came from investment income. The general purpose income is used for expenditures on instruction, instructional support, non-sponsored research, and student support.

The size of the operating grant to the universities is determined by the government after consultation with the Ministry and the Universities Council. As a result of general fiscal restraint, the general purpose operating contributions for 1984-85 were reduced by 5% from the 1983-84 level. Table 12 shows university operating grants for the years 1980-81 to 1984-85.

TABLE 12
University Operating Grants, 1980/81–1984/85
($000s)

	1980/81	1981/82	1982/83	1983/84	1984/85
General Purpose Operating Grant	239,612	271,712	300,993	300,993	285,943
Operating Contributions — Other	7,400	17,564	8,889	7,640	8,537
TOTAL GRANTS	**247,012**	**289,276**	**309,882**	**308,633**	**294,480**

SOURCE: UCBC; figures for 1982/83 and prior years restated for consistency with 1983/84 and subsequent years.

Student Fees

As funding levels changed, the institutions undertook reviews of academic programs and management practices to identify areas where efficiency and effectiveness of program delivery could be improved. Simon Fraser University announced a new aca-

demic plan which included the discontinuing of low-enrolment programs such as German and Russian language instruction. Average tuition fees were raised by approximately 25% across the system. Despite these increases, at an average of $1,170 for undergraduate Arts and Science for the 1984-85 academic year, fees in British Columbia are similar to those of comparable institutions in Ontario and lower than fees charged in the Maritimes. Table 13 shows the average fees for both full-time Canadian and foreign students at selected Canadian universities for the academic year 1984-85 for undergraduate Arts. The universities are ranked by domestic fees in descending order.

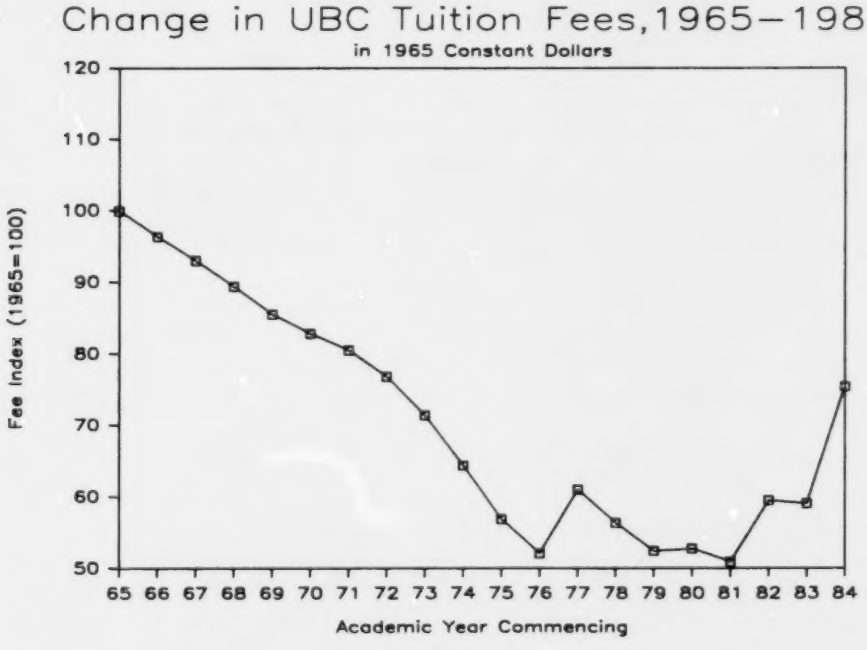
TABLE 13

Undergraduate Tuition Fees, 1984/85 (Arts)
Selected Canadian Universities

University	Canadian Students	Foreign Students
Dalhousie University	$1,410	$2,785
University of New Brunswick	1,325	2,700
University of P.E.I.	1,270	2,646
Simon Fraser	**1,170**	**1,740**
Victoria	**1,170**	**2,047**
University of Toronto	1,160	2,415
British Columbia	**1,155**	**1,733**
University of Saskatchewan	940	940
Memorial University	936	936
University of Manitoba	860	860
University of Alberta	828	1,242
McGill University	570	5,800

SOURCE: Statistics Canada.

FIGURE 6



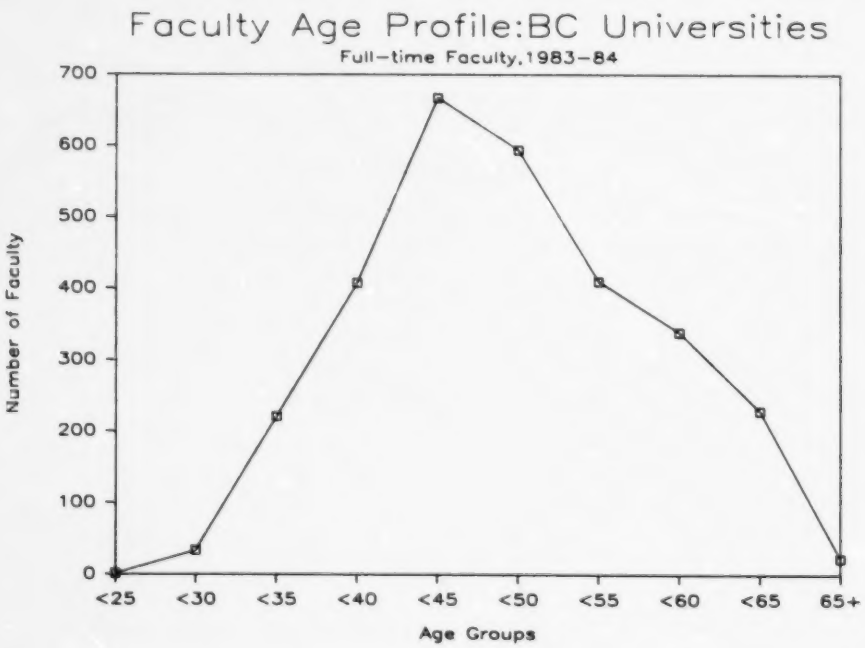
Until quite recently average tuition fees in the province were considerably lower in real terms than they were in the 1960s. Figure 6 shows an index of average tuition fees (first-year Arts) at UBC in 1965 constant dollars from 1965 to 1984. One can see from Figure 6 that fees fell in real terms for nearly a decade from a high in 1965. This trend was checked by a fee increase in 1977, but inflation continued to reduce the real cost of tuition until 1981.

Reduced Financial Flexibility

Most institutions facing reduced revenues can adjust to new circumstances by adjusting their workforces. With 84% of their general purpose expenditures allocated to salaries and half of that to faculty salaries, universities must consider reductions in the faculty salary budgets. The institutions are constrained, however, in adjusting faculty size because faculty members with tenure (almost 4 in 5) cannot be dismissed without cause. In addition, most universities in Canada have an abnormal faculty age distribution which is a result of dramatic increases in faculty hiring in the 1960s and 1970s. This distribution produces fewer current retirements and fewer openings for younger scholars. The universities have been forced to limit salaries, to encourage early retirements and to avoid filling vacancies. These actions are only short-term solutions.

The faculty age distribution at B.C.'s three universities for 1983-84 is shown in Figure 7.

FIGURE 7



Financial Position

(1) *Grant to prevent deficit.*

The reduced general levels of funding in 1984-85 placed UBC in a possible deficit position. Section 28(1.) of the *University Act* prohibits any university from incurring a deficit. At the end of the fiscal year, the Minister announced a special grant to UBC of $2.345 million for faculty adjustments. Audited financial statements for 1984-85 were not available at the time of the report preparation, but unaudited statements suggest that there will be modest surpluses at the two smaller universities and no deficit at UBC as a result of the special grant.

(2) *Interprovincial Comparisons*

In comparison to the rest of Canada, British Columbia historically has provided one of the highest operating grants per student of all provinces. Table 14 shows provincial operating grants per student for B.C. and Canada for the years 1978-79 to 1982-1983, the most recently reported data. Indicators suggest that grants per student will be at least equal to the Canadian average for the 1984-85 academic year.

TABLE 14

Provincial Operating Grants per Student
B.C. and Canada

	1978/79	1979/80	1980/81	1981/82	1982/83
British Columbia	$5,024.59	$5,336.67	$5,683.36	$6,433.04	$6,401.76
Canada	$4,455.06	$4,840.26	$5,154.86	$5,480.42	$5,676.72

SOURCE: *Interprovincial Comparisons of University Financing—May 1985*, Sixth Report of the Tripartite Committee on Interprovincial Comparisons.

Operating Contributions-Other

Operating Contributions-Other include designated contributions to the three universities for the development of special programs and projects and to other agencies such as the Open Learning Institute for their programs and services.

It is the government's policy to fund special major university projects for a limited time period from Operating Contributions-Other, and then to transfer the funding responsibility to the universities and the Universities Council through the general purpose operating grant. The Engineering Expansion Project is an example of one such special grant. Table 15 shows the expenditures for Operating Contributions-Other for 1982-83 to 1984-85. As noted in the 1982-83 Annual Report, comparisons with earlier fiscal years are difficult because of changes in the method of reporting transfers.

TABLE 15

Operating Contributions-Other
Actual Expenditures, 1982/83–1984/85

	1982/83	1983/84	1984/85
Knowledge Network of the West	$2,086,000	$2,574,597	$2,500,000
Open Learning Institute	1,955,000	1,860,000	1,767,000
Distance Education (Interior Programming)	4,114,000	3,075,000	3,027,991
Engineering Expansion Project	2,000,000	2,750,000	2,000,000
Affiliated Theological Colleges	379,000	360,000	360,000
Western College of Veterinary Medicine	721,172	806,760	768,930
David Thompson University Centre	725,000	690,000	—
Health Care Teaching Costs	1,170,000	—	—
Industrial Education Teacher Training	439,000	—	—
Library Retrospective Conversion Project	400,000	—	—
B.C. Forecasting Committee	7,000	7,000[2]	—
Chinese Scholar Program Research Support	60,000	60,000	—
UCBC Grants-Other Projects	86,000	75,000	—
Miscellaneous Grants	11,061	10,000	—
Contingency	—	—	2,043,000[3]
TOTAL	**$14,153,233**	**$12,268,357**	**$12,466,921**

NOTES:

1. Includes Interior Program — $2,300,000, Knowledge Interior Programs — $500,000, Phase out costs of the David Thompson University Centre — $191,791, small miscellaneous Distance Education Grants — $14,200.
2. The B.C. Forecasting Committee ceased to function at the end of 1983-84 fiscal year.
3. The estimates provided a total of $12,555,000 for this sub-vote. Unexpended funds from this sub-vote $880,000 and from the Capital Support Program $1,163,000 were combined with $302,000 from the Ministry of Finance to provide $2,345.000 to meet the projected deficit at UBC resulting from faculty adjustments.
4. In addition to the above $1,250,000 was provided in this sub-vote for operating equipment purchases. This brings the total to $13,716,921. The operating equipment funding is kept separate for comparability purposes over the three years.

For 1984-85, the Operating Contributions-Other were:

- Distance Education (interior programming) offered by the universities in interior and coastal communities. Some of these programs are offered through the facilities of the Knowledge Network.
- to the Knowledge Network to cover capital requirements, the costs of university programming and the operation of the Network. A major component of the costs is the lease of a channel on Telesat Canada's Anik C satellite to transmit the Network's general interest programming and the programs offered by various educational institutions throughout the province.
- to the Open Learning Institute for the provision of university level courses.
- for Engineering Expansion at the three provincial universities. This is the fourth year of a five-year program of special funding for this needed expansion. After 1985-86 the funding will be rolled into the base operating budgets of the universities. The allocations among the three universities were as follows: UBC — $750,000, UVIC — $750,000, SFU — $500,000.
- to the Western College of Veterinary Medicine in Saskatoon to train B.C. veterinary students. In 1984-85 there were 71 B.C. students registered at the College which offers the only program in veterinary medicine in Western Canada. Costs are shared by the Western Provinces on an enrolment basis.

- to the theological colleges, Regent College and the Vancouver School of Theology, affiliated with UBC to assist in the provision of post-graduate instruction.
- for continuing full-time students from the David Thompson University Centre. On January 4, 1984, the government announced the closing of the centre in Nelson as of May 1,1984. The Centre had offered college programs given by Selkirk College and university-level courses from the University of Victoria. The closing of the facility affected approximately 50 students who would have been continuing in full-time studies. The government made arrangements to provide grant assistance to those students who wished to complete their full-time studies at another college or university. The special grant, administered by Selkirk College, provided a dislocation allowance, an allowance for moving expenses and a fee differential allowance.
- for other minor grants administered through the Council including the Chinese Scholar Program, Bluma Tischler Fellowship and B.C./People's Republic of China Exchange Program. These were funded from monies held by the Council for these purposes and no additional funds were required in 1984-85.
- to The University of British Columbia to cover its deficit at the end of the fiscal year.

Capital Support Program

The Capital Support Program supports three main areas:

- purchase of capital equipment items;
- maintenance work and improvements to existing facilities (also referred to as public works and renovations); and
- construction of new facilities.

Equipment Cash Grants

The Ministry provides cash grants to each university for capital equipment purchases. In 1984-85 cash grants totalled $1.25 million and were allocated according to the recommendations of the Universities Council. Table 16 shows cash equipments grants in 1984-85.

TABLE 16

Equipment Cash Grants, 1984/85
($000's)

University	1984/85
UBC	750
SFU	275
UVic	225
TOTAL	**1,250**

Renovations and Public Works

The government has made a major capital investment in the universities. The present capital plant of the three universities has an insurable replacement value exceeding $1.6 billion. Each fiscal year the Ministry provides funding specifically allocated to each university to maintain and make improvements to the existing inventory of facilities. Due to the continuation of revenue problems the government has had to continue to restrain funding for minor capital projects.

While the available funds were restricted for public works and renovations, the government did grant approvals totalling $4,000,000. Table 17 shows the grants for 1984-85.

TABLE 17

Grants for Public Works and Renovations, 1984/85
($000's)

UBC	2,500
SFU	800
UVIC	700
TOTAL	**4,000**

Construction of New Facilities

During 1984-85, one project was approved for construction. In June 1984, Treasury Board and Cabinet approved $5,640,000 for the construction of a Pulp and Paper Centre at The University of British Columbia. This approval, together with the previously approved pre-construction planning authorization, brought the total amount authorized for this project to $6,000,000. This project, which will provide a world-class facility for pulp and paper research and education, is a triumph of cooperation between industry, the university and government. Industry (represented by the Pulp and Paper Research Institute of Canada) will contribute $1 million annually towards the operation of the centre — all in staff costs and support services. A $250,000 scholarship program for graduate students has also been established. The academic Pulp and Paper Centre complements an earlier approved industrial research project financed by industry and the federal government at The University of British Columbia's Discovery Park.

In 1983-84 it was reported that approvals totalling $16 million were granted to the University of Victoria for the construction and equipping of the Science and Engineering Complex. By June 1984, construction had commenced on the Complex with occupancy scheduled for December 1985.

Capital Borrowings

All costs occurred for building projects, public works and renovations are financed through a two-stage debt-servicing procedure. Table 18 provides a breakdown of the authorized university capital borrowings from 1982 to 1985. Since the current capital approval and financing procedures were introduced in 1977, projects worth $239 million have received approval for borrowing authorizations totalling $205 million. Against this approved amount, borrowings to date equal $189 million. Servicing this debt cost over $28 million in fiscal 1984-85.

TABLE 18
Authorized University Capital Borrowings
1982-1985 (to date)
($000's)

Cumulative Totals: March	1982	1983	1984	1985
System				
Estimated Costs	215,693	234,701	250,033	238,694
Authorized Borrowings	179,282	186,753	196,443	205,364
By University:				
UBC				
Estimated Cost	126,325	133,969	147,719	150,163
Authorized Borrowings	106,719	110,809	118,917	127,057
SFU				
Estimated Cost	54,977	57,058	57,920	58,720
Authorized Borrowings	44,752	46,833	47,695	48,495
UVIC				
Estimated Cost	34,391	43,674	44,394	29,811
Authorized Borrowings	27,811	29,111	29,831	29,811

SOURCE: Ministry Records

ISSUES, ACTIVITIES, EVALUATION

Established Programs Financing (EPF)

In 1977-78 an agreement was signed between the federal and provincial governments which changed the method of fiscal transfers for post-secondary education and health care. While the provinces assert that these are unconditional grants, the federal government asserts that the funds should be transferred to each of the programs in the same proportions as they were in 1975-76. The merits of each case have been argued extensively by proponents for both sides. These issues will have to be resolved in the upcoming negotiations to establish a new fiscal arrangements package for the period 1987-1992. This Ministry will play a supportive role to the Ministry of Finance in these negotiations as they are perceived as fiscal matters. However the Ministry will have to respond to those in the higher education sector who would argue that EPF is an educational matter rather than a fiscal issue.

Five-Year Academic Plan

In January 1985, the Minister asked the Universities Council to develop a five-year academic plan in consultation with the universities.

The environment in which the universities operate and the issues they now face require new responses. In the 1960s and 1970s, the university system expanded rapidly. This expansion was fuelled by a buoyant economy, a public desire for more investment in higher education, increasing female participation, and a dramatic increase in the 18-24 year age group. The population boom is over and government is facing increasing demands for social and health care programs geared to an aging population. The forecast decline in the university age cohort will require the universities to adjust to reduced demand. The five-year plan is to stress the following goals:

- a modest reduction in overall size in keeping with post-secondary forecasts;
- protection of core university programs;
- allowance for growth of emerging programs of high academic quality, high student demand and high provincial need;
- phasing out of low quality programs and a reduction in the size of low-demand programs; and
- enhancement of the overall excellence of the individual institutions.

The Universities Council will preserve university autonomy in developing the plan while ensuring that the plans of individual institutions result in an effective and harmonious plan for the province. The Council had commenced work on the plan before the end of the fiscal year and will submit its first report with the 1986-87 budget submission.

Evaluation of Performance

Recognizing the arm's-length relationship between the Ministry and its ultimate clients — the universities and their students — the Universities Division believes it has had good to moderate success in meeting its goals and objectives in the 1984-85 fiscal year.

The Division believes it has performed well in meeting the goal of acting as a focal point for university issues in the province. The addition of another professional to the staff following the Ministry reorganization has allowed the Division to become more specialized — the Division now has a full-time Manager of University Services; to increase its services to the universities and to the general public (e.g., for enquiries and correspondence); and to enlarge its contacts with other provincial governments and federal agencies such as Statistics Canada.

The Division recognizes that all agencies and institutions receiving government funding were required to do with less in the past fiscal year. Increased demands for social and health care services for an aging population may require some reduction in the share of provincial resources that is available for higher education. Nevertheless, the Division believes that it must improve upon its role as an advocate for the universities in B.C. and for higher education generally at every opportunity, not just during the budget process which determines the division of the province's public expenditurers. The Division must ensure that the vital importance of our universities to the provincial economy is fully understood by the government and members of the public; the province must provide a climate that supports the demonstrated excellence of our institutions.

Despite the tension that sometimes exists between the Ministry and the universities as autonomous institutions, increased consultation and cooperation have enabled the Division to improve upon its accountability objective. This was demonstrated most noticeably during work on the Special Advisor's project.

The Division also believes that its increased staff and improved specialization have enabled it to expand its knowledge about higher education issues and to provide better analysis for the Minister.

The Division has performed well in representing the universities'concerns about student aid. The 1985 Throne Speech announced plans to establish a loan remission program. The Division was working on development of the program in cooperation with the Ministry of Education at the end of the fiscal year.

SCIENCE AND TECHNOLOGY DIVISION

Mandate and Mission

As set out in the *Ministry of Universities, Science and Communications Act (1980)*, the mandate of the Science and Technology Division is "to develop policies that will encourage the development of science and technology". To accomplish this the Ministry has established a support system designed to provide an environment in which scientific research and technological development can flourish. Encouraging the growth and development of high technology industry in B.C. and stimulating technological innovation and entrepreneurship are fundamental to the Ministry's efforts to create new industry and assist existing industry to become more competitive.

Policies and programs have been structured to achieve optimum economic benefit by investing in the chain of events leading from basic research, through applied research and development, to commercialization and market development.

Clients Served

The Science and Technology Division, and its various programs, serve the interests of researchers in industry and the universities to enable them to undertake applied research, development and technological innovation toward the commercialization of new products and services. Industry is further served through the provision of venture capital for advanced technology enterprise. The public is served through services provided to inventors and innovators to assist them in developing their ideas toward the commercial stage and in providing greater public awareness of science and technology activities within the province. The division also administers the Natural Gas Vehicles (NGV) Conversion Grant Program.

Program Delivery Mechanisms

Funding provided through the Ministry primarily supports the activities of several government related and non-government agencies, namely:

The Science Council of British Columbia;
The Secretariat on Science, Research and Development;
Discovery Foundation and its operations:

- Discovery Parks Incorporated
- Discovery Enterprise Program
- The B.C. Innovation Office;

The British Columbia Research Council, and its technical operating component, B.C. Research

GENERAL FUNCTIONS

The division is responsible for developing, coordinating, directing, and assessing programs, and making recommendations concerning research program proposals and program alternatives. Assistance is provided to persons and organizations seeking information and direction concerning specific research and development activities and opportunities within the province.

The division has grown in the past year and now has new capabilities to fulfill its functions. In June 1984 internal reorganization of the Ministry brought a new Assistant

Deputy Minister and staff from the Communications Division, thus enhancing the engineering, economics and research capabilities of the science and technology team.

The Science and Technology Division is divided into two branches — the Programs Branch and the Policy Research and Information Systems Branch.

PROGRAMS BRANCH

The Programs Branch is responsible for the overall coordination, promotion, development and administration of science and technology programs which in fiscal year 1984/85 totalled over $10 million.

During the year, the Programs Branch undertook to strengthen the existing science and technology program structure and funding base in line with the requirement for cost-effectiveness and accountability. Major reviews were carried out in each program area with the result that some changes occurred, including the relocation of the Science Council of British Columbia into existing space at the multi-tenant facilities at Discovery Parks, Burnaby, and the transfer of the Methane Energy Development Program to the Programs Branch at the end of March 1985. These adjustments will enhance the effective delivery of programs to the various client groups, including researchers, industry and the public. Work plans and multi-year planning has been instituted for the Division and its non-government agencies.

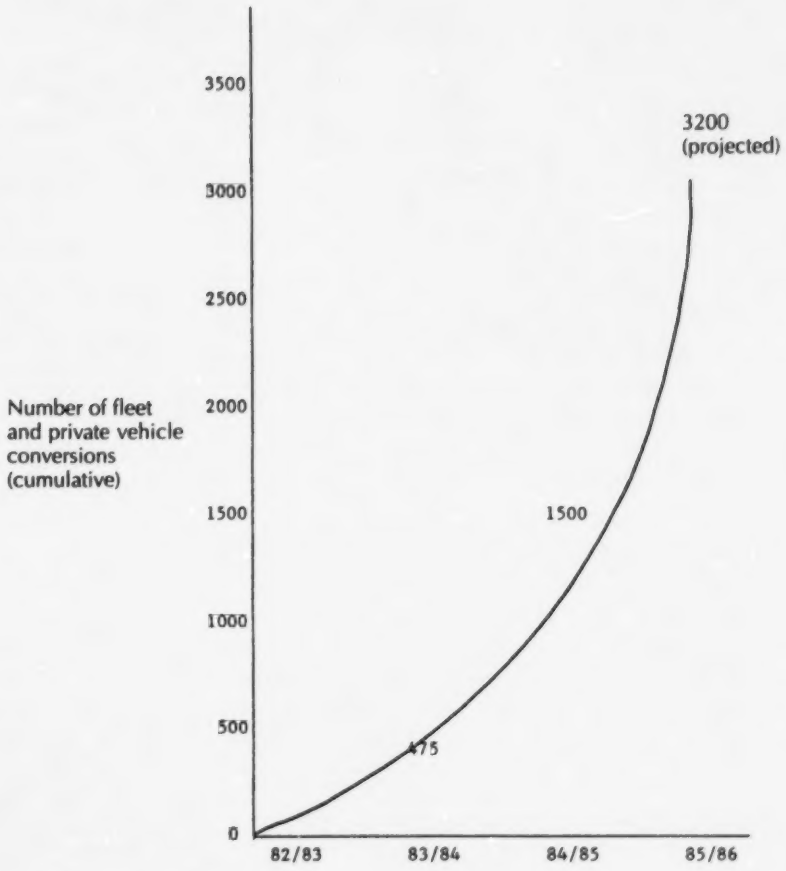
Federal/Provincial Memorandum of Understanding

As part of a government-wide effort in the spring of 1984, major technological development initiatives were proposed by the branch. A federal-provincial Science and Technology Memorandum of Understanding, as part of the larger effort of both governments toward an Economic and Regional Development Agreement (ERDA), was signed on March 1, 1985, leading the way to a major cooperative arrangement with the federal government concerning the development of advanced technology industry in British Columbia and the application of technology to existing industries. A proposed Science and Technology Subagreement is anticipated to provide up to $20 million in funding for new initiatives.

NGV Conversion Program

The Ministry's ongoing initiative to encourage the use of natural gas as a cost effective transportation fuel reached new levels of success in 1984/85. Over 20 new Natural Gas Vehicle (NGV) fueling stations and more than 40 NGV conversion outlets were in operation in March, 1985, throughout British Columbia. Approximately 1,500 fleet and private vehicles have been converted to operate on natural gas as of March, 1985. During the year, the NGV Conversion Grant Program funded 275 applicants with the $200 provincial government grant for private vehicle conversion. The government also established a new policy, effective August, 1984, that all new purchased and leased vehicles operated by the government and Crown corporations be converted to operate on natural gas in areas where fueling stations are available. The following graph illustrates the growing success of the NGV program since it began in 1982/83.

GRAPH 1. Total NGV Conversions



Graph 1 Total NGV Conversions

Science and Technology Collaboration

The Programs Branch continued to collaborate with other governments on a provincial, national and international level. Through the Western Canada Committee of Officials on Science and Technology, cooperative projects such as the Organization Economic Cooperation and Development (OECD) study on science and technology activities in Western Canada were initiated. A further collective initiative was taken with respect to the Federal-Provincial meeting of Ministers responsible for Science and Technology held in Calgary, February 4-5, 1985. This was the fifth of its kind since 1978.

On the international front, through arrangements with the federal Ministry of State for Science and Technology (MOSST), the Programs Branch proposed initiatives with the japanese government concerning technology transfer. Efforts initiated this year will hopefully lead to new opportunities for cooperation with the Japanese in the development and transfer of technology to B.C. industry.

Other Projects and Activities

During the year, the Programs Branch was responsible for the review, analysis, development and recommendation of several other new policy and program initiatives. Major initiatives included:

- the development of University/Industry Liaison Offices at each university, for enhancement of the transfer of new technology to industry;
- the promotion of Vocational Rehabilitation Research Coordination in B.C.;
- the development of special training programs for university graduates and others involved in advanced technology in B.C.; and
- the promotion of Technology Enterprise Zones as a component of Special Enterprise Zones.

POLICY RESEARCH AND INFORMATION BRANCH

The primary function of this branch is to undertake policy research and develop information systems in support of the division's mandate.

The branch has completed a number of reports and policy initiatives since its inception in June, 1984 including reviews of existing science policies of the Ministry, reports respecting science and technology prepared by task forces commissioned by the federal government, reports prepared for the Science Council of Canada and the Economic Council of Canada, and a proposed OECD study on technology in Western Canada.

A draft report of B.C.'s science and technology policy was completed for review by senior management. Another report was completed on the Ministry's science investments in the economic development of the province.

A planning review and evaluation system was developed for the Science Division and for its agency programs. The intent of this system is to enhance the efficiency and accountability of the Division and its programs. A review of the 1984/85 work was completed for the Division to test the system, and a work plan for 1985/86 was prepared along with a multi-year plan for the 1985/88 period.

Economic analyses were conducted, and submissions made to Cabinet for several prospective industrial investments in the province. Staff assisted in a review and analysis of the Provincial Economic Development Strategy.

SCIENCE COUNCIL OF BRITISH COLUMBIA

The Science Council of British Columbia, and the Secretariat on Science, Research and Development, were established in June 1978 under the *Science Council of British Columbia Act*. The Council and Secretariat report to the Minister of Universities, Science and Communications.

The Council is composed of fifteen members — six suggested by the Council itself and the balance by the government — appointed, normally for two-year terms, by the provincial government. They include distinguished scientists and engineers from the universities and research institutes as well as prominent executives from the business world in British Columbia.

The principal duties of the Council are to:

- award fellowships, scholarships and prizes to encourage development of improved technology and retention of skilled research personnel in the province;

- evaluate research and development proposals and recommend funding; and
- advise the government on science matters.

Over two hundred different projects have received support through research grants totalling more than $20 million and, already, the results are impressive. Scientists and engineers have been able to apply their scientifc skills to the development of new products and systems for the economic and social improvement of the people of B.C.

New companies have been formed while others have expanded, new jobs have been created and others have been saved. More details are available in the Science Council's own annual report.

The Graduate Research, Engineering and Technology (GREAT) scholarship program was created to encourage more interaction between the universities and the private sector. These awards, the value of which was increased from $11,500 to $12,000 during the year, were made to 50 students in 1984/85. Their theses were performed partly in an off-campus setting, enabling them to gain experience of a more practical nature than is possible on the campus. The awards also encourage businesses, agencies and consulting firms to use university expertise to help solve some of their research problems.

The Industrial Post-Doctoral Fellowship (IPDF) program provides a subsidy of $25,000 towards salary and benefits to any British Columbia firm willing to hire a recent PhD graduate in the sciences or engineering in a job related to their training. Six IPDF's were awarded in 1984-85, to firms in Sidney, Langley, Richmond and Vancouver.

TABLE 1

Science Council of B.C. Awards 1984/85

Type of Award	Number of Awards Granted	Dollar Value of Awards Granted
Research Assistance Grant	62	$2,800,000
GREAT Scholarships	50	596,000
Industrial Post-Doctoral Fellowships	6	150,000
B.C. Science and Engineering Awards	3	not applicable

The ongoing administration of the grants programs and other important activities is managed by the Secretariat on Science, Research and Development. The Secretariat provides parallel services to both the Science Council and the British Columbia Health Care Research Foundation, funded through the Ministry of Health. It distributes information on the programs to potential applicants, reviews applications and constantly monitors the progress of each researcher.

DISCOVERY FOUNDATION

Discovery Foundation was established by the Government of British Columbia in 1979, under the *Societies Act*, as a non-profit organization. The overall objective of the Foundation is to promote the growth of scientific research, technological development and industrial applications of advanced technology, which will create employment opportunities and broaden the economic base of the province. It does this by serving and assisting inventors, entrepreneurs, university researchers, and small or start-up companies involved in the application of advanced technology. Since its inception, Discovery Foundation has stimulated and contributed significantly to the growth of technology-based industry in the province.

The major activities of the Foundation are carried out through its various programs and divisions, namely:

- **Discovery Parks Inc.** — provides incubator facilities in a multi-tenant building for small and start-up companies and land leases in research parks for tenant-owned buildings;
- **The B.C. Innovation Office** — has established an extensive network of government and industrial contacts to assist entrepreneurs and provide counselling and guidance to innovators to commercialize their technology; and
- **The Discovery Enterprise Program** — a venture capital program, provides seed capital to assist in financing small and start-up businesses involved in advanced technology.

Discovery Parks Incorporated was established to develop and operate research parks adjacent to the major post-secondary learning institutions in the province. Discovery Parks attempts to attact to the research parks tenants involved in advanced technology or new applications of existing technologies; to promote interaction between tenants of research parks and the faculty and students of the adjacent learning institutions; and to promote a climate of entrepreneurship and innovation which will encourage the growth of research and development.

The multi-tenant research building located in the Discovery Park adjacent to the B.C. Institute of Technology is now fully leased and accommodates more than 40 companies. They have invested over $5 million in interior improvements and scientific equipment and employ approximately 180 people.

Microtel Pacific Research, the first major tenant in the Simon Fraser University Discovery Park, employs 350 people in its research facility in this park.

At the University of British Columbia Discovery Park, a lease was finalized in 1984 with the Pulp and Paper Research Institute of Canada (PAPRICAN) to invest $15 million in the construction of their own Western Research Laboratory. The project is underway: the building is expected to be completed in the fall of 1985, and will employ 100 people.

As a result of a cooperative agreement between federal and provincial governments, funds have been made available for the construction of an Aquaculture Research Centre at the Pacific Biological Station in Nanaimo.

Discovery Parks, with three research parks in advanced stages of development, has attracted capital investment of $68 million and facilitated the employment of 630 persons in the parks. By the end of fiscal 1985, this number is expected to increase to approximately 800. Considering the state of the economy during the past three years, the results have been very encouraging.

The **B.C. Innovation Office** was established in 1982 as a cooperative program of Discovery Foundation, the Science Council of B.C. and the Ministry. Its function is to provide guidance to entrepreneurs, investors and innovators about the various public and private services available to them regarding business plan development, financing, patents, and the overall commercialization process. Since December 1984 the Innovation Office has been administered by the Foundation, with the help of an Advisory Committee consisting of industry and academic members. In just over two years the Innovation Office has handled over 11,000 enquiries, and its counselling service to innovators and entrepreneurs has resulted in 60 new products on the market, 300 jobs being created and $4 million in capital investment.

The **Discovery Enterprise Program** provides seed venture capital funding for advanced technology enterprises, products, and processes. The Program is administered by the Foundation under an agreement with the provincial government and is designed to

encourage advanced technology in British Columbia, and to increase employment opportunities. Projects considered under the Program must have a significant component of advanced technology, and are evaluated on the basis of quality of project, capability of principals, business risk, job creation, and Program pay-back. The Program encourages joint funding with support from other venture capital firms and investors. In most cases projects funded would likely not proceed at this time without support from the Program.

Since its inception in December 1983, the program has received over 1000 enquiries and more than 300 proposals. Four voluntary Industry Review Committees in electronics, software, biotechnology, and engineering, have reviewed these proposals, in most cases involving direct interviews with the proponents. The Trustee Review Committee, which oversees the program review and approval process, has to date authorized the funding of 24 projects for a total amount of $6,570,000 of which $1,916,000 was committed in the four months of operation prior to March 31, 1984, and the balance in the 1984/85 fiscal year. Currently, approximately 100 active files with business plans are under review.

Foundation project development activities have attracted an estimated $31 million in direct investments and approximately $72 million in indirect investment. The Foundation also publishes the B.C. R&D Newsletter, distributed worldwide six times a year, and runs the Discovery Club, an informal organization for anyone interested in technological development in B.C.

Discovery Foundation is administered by an independent Board of Trustees who meet quarterly. The Board is presently comprised of 24 members with representation from the provincial and federal governments, the three universities, the B.C. Institute of Technology, and the private sector. Committees of the Board, the most important of which are the Executive Committee and the Trustee Review Committee, meet regularly to review progress of the Foundation, its programs, and its subsidiaries.

Discovery Foundation provides an Annual Statement to the Minister of Finance and the Auditor-General of British Columbia.

BRITISH COLUMBIA RESEARCH COUNCIL

The British Columbia Research Council is an independent non-profit society incorporated in 1944 under the *Societies Act of British Columbia*. The Council consists of approximately 75 members who are interested in the advancement of science and technology in the province.

B.C. Research is the operating component of the Council and conducts scientific research, engineering and technical work in a 180,000 sq.ft. research facility located on the UBC campus. B.C. Research staff and operations are directed by a 21-member Board of Management, composed of representatives from industry, the provincial and federal governments, universities, labour and a representative of B.C. Research staff.

B.C. Research works towards the practical application of science, engineering and technology for industrial development. Within British Columbia it maintains close working relations with industry and government and obtains most of its operating revenue from contract work for clients in B.C., Canada and abroad.

The Ministry provides supplementary funds to B.C. Research — approximately $1.2 million or 13.6% of its total income — in areas of research that have particular relevance to the province. During 1984 these funds were used mainly for support of work in fisheries technology and biotechnology. A portion of the Ministry funding is used for initial investigation of new areas of activity. The balance contributes toward the cost of providing research assistance and problem solving and technology application with B.C. industry, particularly to smaller manufacturers and processors.

COMMUNICATIONS DIVISION

This division comprises three branches: Administrative and Communications Programs, Telecommunications Services, and Financial Services.

Responsibilities of the Division are to:

- provide and manage the communications systems required by government ministries and agencies to carry out their assigned responsibilities;
- formulate policy recommendations for government, and implement approved policy directions and regulations, in order to encourage the orderly development of communications throughout the province;
- support research and development to encourage continuous growth in the telecommunications industry in British Columbia;
- provide grants and consultation services to assist communities to improve their telecommunications services;
- maintain industry and intergovernmental liaison with respect to provincial and national issues or developments which could possibly jeapordize the realization of maximum benefits from telecommunications for British Columbians; and
- provide the administration and finance requirements for the Ministry.

A considerable amount of repriorizing and restructuring had to be carried out within the Communications Division during the year. The combination of reduced ministry staffing level objectives and internal Ministry reorganization resulted in a reduction in staff in the Telecommunications Services branch from 102 in 1982/83 to 70 at March 1985, and in Communications Programs — previously designated "Communications Development" — from 12 to 6. The challenge was to continue to furnish vital services to government and a provincial presence in Canadian communications affairs with reduced resources.

ADMINISTRATIVE AND COMMUNICATIONS PROGRAMS BRANCH

This branch incorporates the Communications Policy section, the Technology Applications section, and the Administration section.

The objectives of the branch are to facilitate action by the provincial government in the optimization of social and economic benefits of telecommunications for residents of the province, and to co-ordinate and accommodate the administration and personnel requirements of the ministry.

Branch staff totals eight, and includes a director, three professional engineers, a research officer, a personnel technician, an administrative co-ordinator, and a secretary.

Policy Section

The goals of the Ministry, in terms of telecommunications carrier policy, are to ensure that carriers serving British Columbia have the capability to provide efficient and reliable communications facilities, while making a positive contribution to the province's economic development. The Ministry also wants to ensure that users, in both the business community and the general public, are not imposed with excessive costs for service.

During the year, the issue of competition in the provision of telecommunications carrier services warranted considerable attention by the branch. While the broad issue has been growing over a number of years, particularly as a result of deregulation policies in the United States, it came to the forefront in Canada with the application by CNCP Telecommunications to provide inter-exchange (long distance) service in and between the operating areas of B.C. Tel and Bell Canada. As all three companies are under the exclusive jurisdiction of the federal government and are regulated by the Canadian Radio-television and Telecommunications Commission (CRTC), the provincial government has no direct means of resolving the issue. Nevertheless, the provincial government is concerned about the potential impact on business and residential subscribers. Ministry staff appeared at the CRTC regional hearing in Vancouver on September 6, 1984, and made a representation to the Commission. The provincial views were also expressed at a bilateral meeting in October 1984 between the Minister of Universities, Science and Communications and the federal Minister of Communications.

Briefly, the province's position favours, in principle, the introduction of competition in telecommunications services. Concern is expressed about the tendency to accept the view that long distance competition, in bringing toll rates down, will lead directly to a corresponding increase in local rates. The Ministry holds that the relationship has not been proven and that increases in local rates can be minimized or avoided. The Ministry has also expressed the view that the uneven jurisdictional arrangement in Canada is a major impediment to rationalizing telecommunications policy and regulation, and resolution on that aspect is a prerequisite to addressing such issues as competition.

The telecommunications industry in the United States has experienced a major unpheaval with the breakup of AT&T and the emergence of widespread competition in the long distance market. The industry remains unsettled, as the impact of competition has yet to be fully accommodated in the non-competitive sectors. Because the U.S. situation is still evolving and because of the different industry structure and regulatory arrangement, the U.S. experience does not provide a perfect model with which to guide Canadian policy makers. Nevertheless, U.S. developments are having a direct effect on Canadian telecommunications. An example is bypass. Many Canadian corporate users are taking advantage of the lower rates offered by U.S. carriers to place calls from Canada to a U.S. destination or through the U.S. to a Canadian destination. As a result Canadian carriers, including B.C. Tel, are reporting revenue erosion.

In January 1984 the federal government initiated a review of telecommunications policy. That review was not concluded by the end of the fiscal year but is understood to address the options of major realignment in jurisdictional and regulatory roles. All provincial governments have been keenly interested in the process although there have been wide-ranging positions expressed.

Branch staff organized a meeting of provincial officials in Toronto in December 1984 aimed at developing a common position. Follow-up meetings, this time including federal officials, were held in February and March, 1985. A consensus, as yet, eludes governments and the Ministry will continue to monitor developments closely. The position of the provincial government is consistent with the long-held policy of obtaining jurisdiction authority over provincial communications activity.

Another telecommunications development during the year was the emergence of local measured service (LMS) as a potential billing method for local telephone service. This method calculates a customer's bill on the basis of either the number of calls, duration of calls or time of day, or some mixture of the three factors. The system is a distinct alternative to the present system in which subscribers pay a flat rate for unlimited local calls.

During the year the Ministry received an increase in letters of concern and complaint from the public on the LMS issue. Often these letters were also concerned with the competition and deregulation issue and the B.C. Tel rate increase application. As a result, the branch devoted considerable activity to responding to these letters attempting to mitigate the confusion and allay some of the concerns expressed.

The telecommunications carrier industry in British Columbia is expected to remain unsettled in the coming year. The possibility of major changes in the industry, however, also indicates significant opportunities for market entry. The provincial government will continue to work with the other governments with the aim of facilitating intergovernmental decision-making, which in turn will hopefully bring about a resolution of outstanding issues.

The Ministry's "open skies" policy pertaining to the broadcast, cable and satellite sectors, is meant to ensure that British Columbians have access to television and radio services of the highest quality and diversity. The Ministry also wants to see regulatory requirements minimized where they negatively impact upon providers and consumers of services.

The field of satellite and cable television, as in past years, was primarily characterized by tension between the federal and provincial governments. On policy aspects the provincial government supports deregulation while the federal government favours licensing controls and restrictions on the nature and means of services distributed. In terms of jurisdiction the province holds that federal jurisdiction is limited to traditional broadcast activity. The federal government claims jurisdiction over all electronic entertainment and information media.

The British Columbia Utilities Commission (BCUC), acting on Orders-in-Council promulgated in 1982, continued to license operators for the distribution of pay-television and other non-broadcast services. During the year 46 such licences were granted, bringing the total since the program's inception to 272.

For its part, the federal government maintained its position of having exclusive jurisdiction in the field. The legal action brought by the British Columbia Government against the Attorney General of Canada and the CRTC, challenging the constitutionality of the federal goverment's claim, was adjourned in March 1984. A date for resumption of the action has not as yet been set.

The CRTC, however, took legal action against several British Columbia cable operators for operating without CRTC authorization or for distributing services that were not authorized by the CRTC. In November 1984 these actions were stayed by the Attorney General of Canada pending a policy review by the federal government. By the year's end only one of the previous actions, that involving a cable company in Salmon Arm, had been reactivated.

The federal government's policy review took the form of a Task Force on Access to Television in Underserved Communities established by the CRTC. The report of the Task Force, entitled "The Costs of Choice", was released in February, 1985. It offered a number of recommendations aimed at reducing the regulatory burden and expanding the variety of television services available to underserved areas. The provincial government views the report with some disappointment, however, holding that it does not go far enough to deregulate the industry and that no effort was made to resolve the jurisdictional stalemate.

The federal government also introduced a Bill to amend the *Broadcasting Act*. A central feature of the Bill, and one strongly opposed by the provincial government, was a change to the definition of a broadcasting undertaking. The proposed definition extends federal jurisdiction and CRTC authority to include all manner of electronic entertainment and information services. The province disputes the constitutionality of the amendment.

Over the year the Ministry made a considerable number of direct representations to the federal Minister of Communications on various aspects of satellite and cable television. At year's end the differences between the two governments remain outstanding and while the Ministry will continue to advance policies which are seen to be in the best interests of the British Columbia industry and the general public, it is hoped that the coming year will see some resolution.

The trends of recent years are expected to continue in the coming year — satellite television receiving equipment costs will continue to fall, more satellite services will be available and more British Columbians will want to access these services and will do so. Those trends will in turn exacerbate the tensions described earlier unless the federal government modifies its position significantly.

On another matter relating to the broadcast and cable sector, the branch prepared a submission on copyright policy to the Parliamentary Standing Committee on Communications and Culture. The committee will be addressing the federal government's White Paper on Copyright and the branch's submission concerned the issue of a retransmission right for cable and satellite operations.

Late in the fiscal year the branch directed attention to the British Columbia program production industry. The Ministry believes that the film, video and recorded sound sectors have demonstrated significant achievements in recent years and hold the promise of impressive development in the future. The branch has invited other concerned ministries to participate in an inter-ministerial committee with the aim of more effective and coordinated efforts on the part of the government as a whole. On its own behalf the branch prepared a preliminary study of the B.C. sound recording industry.

Technology Applications Section

The Technology Applications section is the principal Ministry resource in communications technology directly involved with the improvement and extension of communications services for the benefit of residential and business users throughout the province, as well as related planning and policy matters. In endeavouring to accomplish the goals of improving and extending a broad but practical range of communications services, in particular with regard to remote and underserved communities and areas of the province, Ministry staff:

- develop and manage grant programs and projects;
- perform a major role in Crown land radio site administration;
- provide a consulting resource for the Policy Section of the Branch, other government ministries and agencies, and the general public;
- respond to inquiries and complaints from the general public concerning telephone, television and radio services;
- maintain a close liaison with telecommunications carriers, broadcasting agencies, cable operators, manufacturers and suppliers of communications equipment;
- monitor, encourage and assist innovation, and research and development activities;
- conduct liaison/information exchange on communications technology with the federal Department of Communications; and
- provide information and advice on new and future technological developments of significance to government ministries, business, and all British Columbians.

Communications Grant Program

Ministry staff administer communications grants which provide financial assistance to communities seeking to improve communications services, and to obtain educational television programming. The rugged terrain of British Columbia and the remoteness of many small communities make the provision of many services uneconomical for commercial enterprise.

A general grants program provides up to one-third of the capital cost of installations to extend conventional communications services, in particular CBC and BCTV television services, to rural and remote communities, and for the construction of community-owned facilities. Terrestrial (rebroadcast) delivery systems have been superseded to a large extent by the introduction of satellite systems, which have become the principal means of providing and improving communications services.

The Program for Educational and Entertainment Television Services (PEETS grant program) provides financial assistance up to 80% of the capital cost of satellite earth receive and distribution systems for the educational television programming of the Knowledge Network, and one-third of the capital cost of (some) entertainment television channels available on Canadian satellites. Its principal focus has been the distribution of Knowledge Network programming to communities with populations up to 2500. With available funding this year reduced to $100,000 from last year's $560,000 (see chart 1), grant guidelines were changed to decrease assistance from 100% to 80% of capital costs. This action permitted the funding of a larger number of projects than would have been possible otherwise. Projects are closely monitored to ensure reliable and economic installations.

Grant funds are not available to assist with operating and maintenance costs, or with the cost of equipment for pay-tv services. Grant criteria requires that societies identify their source of funds for operating and maintenance costs.

Projects costing more than $5,000 are controlled by releasing grant funds in three or more stages during the project. The last cheque for these projects is released only after a ministry engineer inspects and approves cost records and the quality of installations.

During fiscal 1984/85 PEETS grants totalling $102,000 were approved for eight community associations servicing 6,000 households in 17 communities. Grant applications from a further 29 community associations are outstanding and not yet approved. Grant funds in the amount of $1,200,000 would be required to serve these outstanding applications. A Lottery Branch allocation of $100,000 for communications grants has been authorized for fiscal 1985/86.

Staff assistance is provided to communities on an ongoing basis in the development of projects, the preparation of grant applications, and general advice on operational problems following installation. Reduced grant funds make it more difficult to use consultants for systems engineering. As a result, extra demands are placed upon Ministry engineering staff by community associations.

Table 1, the "PEETS PROGRAM SUMMARY 1981-1985", provides historical data on communication grants approved since the 1981 inception of this program.

Applications for communication grants continue to be received despite the long waiting time required as a result of the applications on hand and the increase in the amount of the capital cost now assumed by the society. Staff closely monitors the availability and cost of new satellite receiving systems. As a result, questions from the public can be readily answered and methods of reducing the cost of installations to deliver the satellite signal of the Knowledge Network can be pursued.

TABLE 1
Peets Program Summary 1981–1985
Fiscal Years

	1981–82	1982–83*	1983–84	1984–85	TOTALS
Budgeted Amount for Grants	$1,650,000	$534,950	$560,500	$100,000	$2,845,450
Value of Grants	$1,017,740	$514,490	$560,500	$102,257	$2,194,987
% of Grant Budget Spent	62%	96%	100%	102%	77%
Number of Approved Grants	20	12	12	8	52
Communities Served	86	49	60	17	212
Households Served	23,000	13,000	18,000	6,000	60,000
Number of Applications Outstanding at Fiscal Year End	28	32	29	29	
Estimated Value of Applications Outstanding at Fiscal End	$1,200,000	$1,400,000	$800,000	$1,200,000	
Cumulative Value of Grants Awarded	$1,017,740	$1,532,230	$2,092,730	$2,194,987	

* Original $1.2 million budget for 1982–83 was reduced to $534,950.

Impact of the Communications Grant Program

Isolation and lack of amenities in northern communities have traditionally affected the quality of living and the stability of the work force. A primary need has been for satisfactory recreational, social, cultural, and educational opportunities, and this need has tested the ingenuity of business and community leaders. It has been reported that the advent of satellite technology and its utilization through the communications grant program has been an important factor in improving the quality of living in the remote and isolated areas of the province.

The Communications Grants Program has, in many instances, assisted in providing television services to rural areas and communities not previously served by any television. This has helped their social and economic climate.

A grant project of particular note serves Burns Lake and the surrounding area. (The grant provided installations to rebroadcast the Knowledge Network signal from three locations, to serve over 6,000 residents.) One of the rebroadcast installations, located on Verdun Mountain, brought television to over 1,100 residents in the Ootsa Lake area for the first time. The Verdun Mountain phase of the project was also instrumental in bringing CBC-TV and FM radio to the Ootsa Lake residents. This was accomplished through arrangements with the CBC for cost sharing in the construction of a hydro line to the remote mountain broadcast site.

Local societies have worked on a volunteer basis with residents and local businesses to reduce the capital costs of grant projects for television distribution systems. These systems have stimulated many sectors of the economy — ranging from systems design, supply, and installation industries, to local contractors for site facilities. When commissioned the systems have also benefited local retail businesses supplying television receivers and allied communications equipment. In one instance, local supplies of TV antennae and television receivers were sold out as a result of the new system being completed!

Communications grant projects often establish an impetus for additional communications systems funded by the local societies, which enlarges the social and economic benefits to the area and the province.

Overview

Community representatives have expressed considerable appreciation for the addition of Knowledge Network service, both with regard to the courses they can take and the general interest programming. The grant program has made the Knowledge Network satellite signal available to about 60,000 households in over 200 communities.

Many communities not yet receiving the Knowledge Network have expressed an urgent need for access to it and its educational benefits. As educational television takes its place in the formal education system of the province, bringing post-secondary educational opportunities previously available only in larger communities, we see an increasing need for expanded two-way interactive systems.

The advent of satellite technology has proven a major boost to the improvement of telecommunications services for previously underserved parts of the province. The Ministry will continue its efforts to use this technology to bring educational programming and conventional communications services to remote communities.

A need also exists to deliver conventional radio to remote communities. Investigations for the economical delivery of radio by satellite will be continued, and liaison in support of research, development, manufacturing, and marketing by companies in British Columbia will be expanded.

Communications Sites Administration

Telecommunications services are a vital requirement of a thriving modern economy. Providing these services throughout the province often requires installations on Crown lands. A large number of these telecommunication systems require high elevation locations (on Crown lands) in remote areas. These locations are generally not suitable for logging, mining, or ranching.

Crown lands are under the control and jurisdiction of the Ministry of Lands, Parks and Housing and the Ministry of Forests. The need exists to coordinate the use of Crown land for communications sites in order to accommodate the growing demand for these strategic locations.

The Ministry assists in the administration of Crown land used for communications purposes on a referral basis with the Ministry of Lands, Parks and Housing and the Ministry of Forests.

The objectives of communications sites administration are:

- to allocate Crown land for communication site purposes;
- to encourage the efficient administration and use of these tenures;
- to retain, where necessary, long-term options over the Crown land;
- to secure a fair return to the Crown for use of the land;
- to minimize potential negative impacts of communications site development on other legitimate users and the natural environment; and
- to coordinate Crown land communication site administration with the requirements of other agencies involved in regulation of communication facilities.

Crown land use for communication site purposes includes, but is not limited to, radio, television, microwave and satellite facilities and related works. As the "lead

technology" agency responsible for planning and management of all communication sites on Crown land the Ministry aims to ensure that the above objectives are met and, in particular, that non-government users do not cause harmful radio frequency interference (RFI) to government users, and that approval of tenure applications is expedited.

All applications for tenure of Crown land are initially sent to the Ministry of Lands, Parks and Housing with a "Communications Site Questionnaire". The relevant information is forwarded to the Ministry of Universities, Science and Communications for evaluation and recommendations.

During fiscal 1984/85 there was a 400% increase in new and renewal tenure applications from fiscal 1983/84. It was difficult to maintain a quick turn-around of all referrals which were submitted to the Minstry but a new data base management system being developed should assist in reducing the current turn-around times. There are more than 1500 communications sites now occupied.

Public Liaison

The telecommunications field has experienced many changes recently as a result of advanced technological change. The trend in deregulation, interim and proposed rate increases and rumours of further changes affecting the cost of local telephone exchange service has resulted in numerous representations to the Ministry. The Ministry has responded to many inquiries and complaints on these issues, in particular concerning local measured service and its possible future implementation, toll bypass, interexchange competition, and deregulation of the telecommunications industry in general.

An issue of special concern involved the operation of Automatic Dial Announcing Devices (ADADS) used for telephone solicitation. ADADS are machines capable of automatically dialling telephone numbers and conveying a pre-recorded message. Many of these devices are operated in a manner to tie up and deny the use of telephone lines, becoming a nuisance and an invasion of privacy for residential subscribers. Also, indiscriminate dialling poses a threat for interference with social and emergency services. Ministry staff cooperated with the Ministry of Consumer and Corporate Affairs to assess and counter this problem. Subsequently, the CRTC established restrictions on the use of ADADS.

Routine complaints are investigated and assistance given concerning poor television, cablevision and radio services, and the availability of these services in isolated regions of the province. There is a broad public awareness of the opportunities for improved communications using satellite technology. At the same time, the factors of complexity and cost are less well understood. The Ministry has played a leading educational role in responding to inquiries from the public. Public awareness has also been aided by ministerial statements.

Telecommunications Carriers

The Ministry maintains an overview of the activities and future plans of the telecommunications carriers which operate within the province. Ministry staff meet on a routine basis with representatives of the B.C. Telephone Company, NorthwesTel, and CNCP Telecommunications.

Discussion items include capital construction programs, new digital switching systems, enhanced services, the replacement of existing manual mobile radio telephone services with new automated systems, cellular radio telephone systems, interconnection with privately-owned terminal equipment and between licensed carriers, bypass of licensed Canadian carriers on long distance service using U.S. networks, consumer complaints, and related issues of future concern including tariff revisions.

This liaison process provides the government with essential information on activities and plans that affect business and the general public throughout the province. It establishes a basis for recommendations on the position to be taken by the province on telecommunications issues.

Research and Development

The Ministry has participated in both research and development projects to advance communications technology that offer benefits for British Columbia in particular, and the state of the art.

In recent years the Ministry participated in a federal experimental development project using the Anik B satellite to study the feasibility of direct-to-home (DBS) delivery of satellite signals. This pilot project was of particular significance to the province. It led directly to the introduction of the PEETS grant program which, for the first time, brought the satellite signals of the Knowledge Network, CBC, and BCTV to many isolated locations in the province. Thus, the general use of satellite signals was established on a major scale in British Columbia.

A satellite television receiving antenna, made of plywood and invented by a former Deputy Minister, continues to attract public interest. This "Zone Plate" (lens) antenna, which uses concentric rings to apply optical principles for the reception of microwave signals, led to research studies of different lens antenna configurations by the Physics Department of the University of British Columbia. The concepts developed hold potential for future applications with high power satellites.

Work underway at UBC during the past year includes the development of a low loss dielectric window, similar to a skylight, which is aesthetically pleasing and will permit the indoor reception of satellite signals. Materials and equipment for these research activities have been provided through Ministry funding.

Federal/Provincial Technology Liaison/Exchange

Ministry staff maintain ongoing liaison with federal and provincial counterparts with an objective to achieve common goals in the provision and improvement of communications services.

Ministry staff contribute to the development of national standards, utilization planning of the frequency spectrum, and planning future communications systems, through participation in federal/provincial committees and by direct consultation with federal counterparts. Typical areas of interest which directly affect British Columbia are:

- standards for privately owned telecommunications equipment to interconnect with common carrier equipment (terminal attachment program affecting B.C. manufacturers, suppliers, carriers and consumers);
- federal proposals for changes in F.M. radio frequency allocations reserved in British Columbia for education;
- an ultra high frequency system for broadcasting several television signals simultaneously at super high frequencies (this concept would provide an over-the-air broadcast system equivalent to cable television);
- proposed frequency assignment for point to multipoint distribution systems (MDS); and
- a future mobile satellite communications system (MSAT) which has considerable potential value for use by transportation and resource industries, government services, and small communities in isolated locations throughout the province. (This project is now in the planning stage. Federal telecommunications policy

proposals have been reviewed and input provided through Ministry membership on a federal/provincial MSAT committee).

The Ministry has contributed to the development of national telecommunications standards through participation on the following Canadian Standards Association (CSA) committees: the Steering Committee on Telecommunications (SCOT), which is responsible for coordinating the standards development efforts of manufacturers, users and regulators; and the Technical Committee on Telephone Sets and Auxilliary Equipment.

During 1984-85 the Technical Committee completed two new standards, necessary as a result of interconnect: Performance and Compatibility Requirements for Telephone Sets (T510); and Magnetic Output Requirements for Handset Telephones intended for use with hearing aids (T515.1)

Ministry presence on the above CSA committees has particular value in serving the interests of consumers, the communications industry, and the provincial government, and in sharing the opportunities for participating in the establishment and operation of Standards facilities.

In recent years, Ministry staff were involved in negotiating the disposition of a federal government contract for research on a high frequency (H.F.) radio data terminal for fish boats. The contract was awarded to a British Columbia firm.

Ministry staff have monitored the (federal) development of a high frequency (H.F.) radio telephone system called "RACE". This system has the capability of providing local exchange and long distance radio telephone service to small isolated communities and locations. Ministry staff attended a prototype test (in B.C.) during the development phase. The equipment is now in production and, at a recent meeting in Victoria, staff discussed with the manufacturer's representative the need and potential applications for this equipment in British Columbia.

Communications Technology Development

High technology communications is a direct spinoff of recent developments in microtechnology. The Ministry was the catalyst in demonstrating the practical value of high technology communications during the Coquihalla highway construction. The route followed by the highway is essentially unsettled territory — almost nothing existed in the way of any communications services or systems. Conventional telephone and radiotelephone systems were expensive, lacked privacy, and had serious time delays associated with their installations. Ministry staff recommended serious consideration be given to the Microtel SpaceTel system. This system consists of a small transportable satellite earth terminal for telephone communications, recently developed by Microtel Limited, Burnaby, at their Microtel Pacific Research Laboratory. It is a world-wide-forerunner of its type.

The Ministry of Transportation and Highways accepted the recommendation to use SpaceTel and installed the first system at their Dawson control camp. Further developments, which allow the reception of the Knowledge Network satellite signal using the common equipment provided for SpaceTel, were examined with favourable results, offering potential for future application in isolated locations.

Following the successful SpaceTel installation for the Ministry of Transportation and Highways, three major construction companies have installed SpaceTel at their Coquihalla highway construction camps. Also, satellite receive earth terminals for entertainment television have been installed at many of the construction camps, alleviating the isolation previously encountered by construction crews.

In addition to its use by construction and resource industries, SpaceTel will shortly be providing first quality long distance telephone service to Telegraph Creek, a small community in northwestern B.C. Telegraph Creek has relied on a (long distance) radio telephone system of limited capability for several years, and recently on a limited satellite link. Performance and reliability, mainly affected by environmental, geographic, distance and access factors, has been less than satisfactory. The carrier responsible for telephone service has contracted for the installation in 1985 of a multi-channel remote SpaceTel terminal at this community. The complete installation planned will provide Telegraph Creek with local exchange and long distance service equivalent to the service available in metropolitan areas.

TELECOMMUNICATIONS SERVICES BRANCH

The Telecommunications Services branch consists of three Sections: Operations, Switchboard Services and Technical Services. Its principal role is to provide, in a timely and cost-effective manner, the telecommunications systems and services that the provincial government requires to discharge its responsibilities. The services include telephone, data communications, facsimile, radio systems, and auxiliary communications services such as intercoms, paging facilities, sound reinforcement, closed circuit television and Hansard recording.

Having responded to the government's 1984/85 restraint program by reducing the branch staff from 88 to 70, a further downsizing during this fiscal year will permit the branch to operate with 67 individuals for fiscal 85/86. This has been done in spite of the fact that in calendar 1984 and 1985 most members of the branch will be devoting a substantial portion of their time to the implementation of PROVNET, the government's new telecommunications network, which will be the second largest private telecommunications network in Canada. The reduction of staff was planned and undertaken during the last six months of fiscal 83/84.

It was not possible to maintain the same level and complement of services in the face of this staff downsizing. The switchboard services to individual ministries in Vancouver were reduced, plans to expand the number of clients on consolidated switchboards in other geographical areas were postponed, and the hours of service of the Message Centre in Victoria were reduced. Courier service in the government precinct area of Victoria was reduced and certain switchboard services curtailed or eliminated.

Operations Section

The responsibility of the Operations section is to implement and administrate all facets of telecommunications networks and independent systems required by government ministries and some Crown corporations.

During the year the normal work load of the section continued at a high level because of the continued demand for system modernization to accommodate downsizing and consolidation. The most significant effort, however, was brought about by the start up of "PROVNET." The order processing statistics shown in Table 2 refer to the regular order process but do not truly reflect the PROVNET effort.

TABLE 2
Telecommunications Order Processing Statistics

Month	Tel Orders	Special Service Orders	Total Orders	Orders Not Processed Within 30 days	Man Hours To Clear
APR	212	24	236	59	150.5
MAY	281	61	342	57	95.5
JUN	229	60	289	68	131.5
JUL	292	11	303	41	111.0
AUG	246	24	270	42	71.5
SEP	203	18	221	52	112.5
OCT	240	31	271	51	112.5
NOV	247	28	275	49	90.5
DEC	318	14	332	56	104.5
JAN	379	36	415	77	118.0
FEB	250	20	270	72	115.5
MAR	344	39	383	74	119.5

Three of the section's five telecommunications analysts were employed almost full time in the PROVNET implementation process. After a three month scheduling delay due to the approval process, the first two of four phases of PROVNET were brought in on time and at less than budgeted cost (Table 3).

TABLE 3
Provnet — Comparison With Cost Benefit Study
Expenditures During Fiscal Year 1984/85
$1,000

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
Study Costs	5,771	6,021	6,054	6,222	24,068
Actual Costs	5,578	5,756	5,754	6,040	23,128
Difference	(198)	(265)	(300)	(182)	(945)

Phase 1 occurred on December 3, 1984 when the Major Tandem Switches at Prince George and Vancouver cut into service. The Prince George switch connected the northern portion of the network, provided modern electronic equipment in Prince George, Prince Rupert, Smithers, Houston, Burns Lake, Fort St. James and Mackenzie; and, provided simplified dialing from downtown Vancouver and established the basic framework upon which Vancouver, the lower mainland, and parts of Vancouver Island will be modernized and connected to the network during the forthcoming year.

Phase 2 commenced February 18, 1985 with the Major Tandem Switch at Kamloops connected to the network and providing new network services to Williams Lake, Revelstoke, 100 Mile House and Lillooet. Other major modernization programs were conducted in Terrace and Fort St. John.

Implementation for other areas was commenced during the year, working toward the final phases of PROVNET in June and September, 1985.

The improvement and expansion of the facsimile network continued throughout the year and has proven to be an extremely popular and cost-effective program — approximately 200 machines are currently in service throughout the province. As locations are modernized with "PROVNET" Direct-in-Dial telephone service, the facsimile machines are being directly tied to the government's private network in order to make further savings in long distance costs. Sophisticated network control equipment, installed in the Message Centre, provides such features as automated multiple addressing and unattended transmission of documents during late night hours when substantial reduction in long distance rates are in effect.

Another major feature of the year was the introduction of the chargeback of all telecommunications charges and services to ministries and some Crown corporations. In the past, while the Crown corporations had been charged for basic telephone service, network services and all telephone costs of the ministries had been paid out of the Telecommunications Services Branch vote. To accommodate Treasury Board's directive to immediately allocate cost of service to users, a "first approximation" chargeback system was put into place for April 1, 1984. Further refinements were introduced during the year.

Switchboard Services Section

The Switchboard Services section is responsible for the operation of switchboards in Ministry offices as well as providing circuit switching for the government's telecommunications network TELPAK. The TELPAK switchboards at Vancouver, Victoria, Prince George, Kamloops and Nelson are operated by Branch personnel with overall supervision being provided from Victoria. Local supervisors also provide support and assistance to personnel operating switchboards in other ministries.

The manager of Switchboard Services, and her area supervisors in Vancouver, Prince George, Kamloops and Nelson, have been totally immersed in the activities surrounding the implementation of PROVNET during fiscal 84/85. This is in addition to their other duties as described in the previous paragraph. This has been an excellent preparation for their new role, after PROVNET, of managing or giving advice on managing switchboards in their areas plus their new role of travelling around to advise clients on the use of new equipment and new network services, such as teleconferencing and facsimile, which will be undergoing rapid improvements and capabilities.

The new approach to the activities of the people in this section is being put into place without additional staff. In fact, further staff reductions in the section will occur in fiscal 85/86.

Technical Services Section

The Technical Services section is responsible for providing a variety of telecommunications services including network engineering, mobile radio communications, non-SNA (IBM's System Network Architecture) data systems and sound reinforcement, and recording and paging to the Legislature.

With the installation of the voice portion of PROVNET underway, the section staff turned their attention to future services. The PROVNET Enhancement Program (PEP) was created with the objective of organizing and managing the development of PROVNET data systems and PROVNET office communications systems, their integration with each other, and with the PROVNET voice communications systems. Analysis of topics such as voice and electronic messaging, auto directory and mobile radio interfacing are underway.

An HP3000 computer was purchased to begin the modernization of the branch billing and work order system. Installation of hardware and software was completed at fiscal year end and, in 1985/86 the system will be gradually implemented. The Technical Services section has developed this system. It is initially intended for use by the Operations section but will ultimately support other branch and Ministry functions.

Specification and implementation of a Private Automatic Computer exchange (PACX) for the Ministry of Environment was undertaken by the section. The PACX is capable of automatically connecting up to 256 terminals with various service requirements to 256 computer ports supporting the required services.

Specification, installation and maintenance assistance of data communications equipment was provided to the Ministries of Environment and Forests, and the B.C. Buildings Corporation.

Upgrading and expansion of mobile radio equipment and systems serving such agencies as the Attorney General, Environment, Lands, Parks and Housing and Health was undertaken. This activity included the establishment of a multi-channel radio link between Vancouver and the ministry's joint-use radio site on Mount Seymour and is intended to serve the communication needs of several users including the Ambulance Service.

Project supervision and implementation of the new computer-controlled sound reinforcement distribution and Hansard recording and logging system for the Legislature was completed. This system, designed to provide the necessary control, supervision, data-gathering and data processing capabilities to meet the requirements of the House and the Hansard Service is now in operation with final commissioning slated for the first quarter of the next fiscal year.

The section also administered approximately 3000 federal Department of Communications licences for government radio equipment and computerized the inventory of radio equipment to expand the system's scope and effectiveness.

FINANCIAL SERVICES BRANCH

Financial Services is responsible for the Ministry's system of financial management. This responsibility includes developing and implementing financial policies, procedures, and systems; budget preparation and coordination; financial reporting; and accounting operations.

Two main functional areas carry out the section's responsibilities. Financial Operations is responsible for developing and implementing policies and accounting procedures, processing all Ministry expenditures for payment, submitting recovery vouchers to government ministries and certain agencies for the telecommunication chargeback system, and preparing the Ministry payroll. Financial Planning and Budgets is responsible for compiling the Ministry's annual budget, providing consultation and advice to managers relating to the budget process, providing financial reports, analyzing expenditure patterns, and preparing expenditure forecasts.

The 1985/86 objectives of Financial Services are to set up in-house training workshops on financial policy and procedures and to establish documented financial administration directives.

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